WIRELESS SYSTEMS MANAGER

SENNHEISER WSM
Instruction manual

SENNHEISER

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Product demo and further information

For further information on the Sennheiser ''Wireless Systems Manager'' and to view a product demo, click on the following link:

http://www.sennheiser.com/sennheiser/home_de.nsf/root/spec_wsm

Important information regarding this instruction manual

This instruction manual describes the "Wireless Systems Manager" (WSM) software.

Additional information on the transmitters and receivers and the NET 1 can be found in the individual instruction manuals. These instruction manuals can also be downloaded from the Sennheiser website under "Service & Support" > "Download Area":

`http://www.sennheiser.com/sennheiser/home_de.nsf/root/service_download`

The user interface for the WSM software is available in different languages.

For your safety

Individuals who are not trained in the operation of computers can unintentionally alter computer files, corrupt or erase them! Ensure that only competent individuals operate the computer on which the WSM software is installed.

Save all files of your WSM on removable media (e.g. CD ROM) as soon as you have created or changed a configuration! Store the removable medium securely in a safe location!

When you are using a firewall, please provide access via the corresponding ports for the WSM.

Capabilities of the WSM

The "Wireless Systems Manager" (WSM) is the professional software for for remote monitoring and controlling Sennheiser wireless microphone and monitoring systems. Due to its intelligent features, the WSM software is the ideal solution for use in TV studios and shows, live performances and musical productions.

Using the WSM software, you can:

- display and monitor the connected devices (devices of the ew G2 series and the EM 3532 receiver have to be connected to a NET 1),
- configure the connected devices,
- perform a frequency preset scan,
- Control 2000/3000/5000 systems and ew G3 systems, combined systems and multi-channel systems,
- update the firmware of a NET 1, the receivers and the transmitters (the EM 3532 does not require a firmware update).

The following Sennheiser systems can be configured using the WSM and the NET 1:

Only transmitters and receivers that are equipped with the same compander system can be combined with each other.

System		Compander system	Receivers	Transmitters
Wireless monitoring system	ew IEM G2	HDX	portable: EK 300 IEM G2	stationary: SR 300 IEM G2 SR 350 IEM G2
	2000 series	HDX	portable: EK 2000 IEM	stationary: SR 2000 IEM SR 2050 IEM
Wireless microphone system	ew G3/ ew G2	HDX	stationary: EM 500 ew G3/G2 EM 550 G2 EM 300 ew G3/G2	portable: SK 500 ew G3/G2 SKM 5xx ew G3/G2 SKP 500 G2 SK ew G3/300 G2 SKM 3xx ew G3/G2
	2000 series	HDX	stationary (2000 series receivers): EM 2000 EM 2050	portable: SK 2000 SKM 2000 SKP 2000
	3000/ 5000 series	HiDyn *plus*™	stationary (3000 series receivers): EM 3532 EM 3732 Command EM 3732 EM 3731	portable: SK 5212 SKM 5200 SKP 3000

System requirements

Required hardware

Processor:	Dual Core Processor, 2 GHz or higher
Memory (RAM):	Recommended 2 GB
Hard drive:	min. 100 MB available
Drives:	CD ROM or DVD ROM
Ports:	Ethernet port (min. 100 MBit/sec)
Screen resolution:	min. 1280 x 1024 pixels

Required operating system

The WSM software supports the following operating systems:

- Microsoft Windows XP Professional Service Pack 2 or higher (32 bit)
- Microsoft Windows Vista Service Pack 1 or higher (32 bit)
- Microsoft Windows 7 (32 bit)
- Apple Mac OS X from version 10.5

Putting the system into operation

Installing the WSM software

To install the WSM software on your computer:

- Close all currently running programs, including those running in the background (e. g. anti-virus programs).
- Place the WSM CD ROM in the CD ROM drive of your computer.
  The installation wizard starts automatically and will guide you through the installation.

If the wizard does not start automatically, select the CD ROM drive that the WSM CD ROM is in, and double click on the file "setup.exe" for PCs or "WSM.app" for Macs.

- Follow the wizard's instructions.
  The installation wizard suggests installation on the program folder on the "`C:\`" drive as the subfolder "`...\Sennheiser\Wireless Systems Manager`".
  You can change the install path by clicking on "Change directory".

You can install the WSM software on several computers in a network (see "Using several WSM softwares in a network – multi access function" on page 7).

Configuring the network

All devices are factory preset to automatic IP address assignment.

To enable communication between the WSM software and the connected devices, configure the network (LAN connections) as follows:

Automatically obtaining an IP address

- Go to the Network Settings in your operating system.
- In the Internet Protocol (TCP/IP) Properties window select the "Obtain an IP address automatically" option button for PCs or the "Configuration DHCP" option button for Macs.
  The assignment of an IP address may take some minutes. With this, the configuration of the network is terminated.

- Only launch the WSM software after having configured the network. For information on how to connect the transmitters and receivers and the NET 1 to the computer, please refer to the individual instruction manuals.
- In order to save network resources, you can also establish a point-to-point connection for the NET 1 (see page 11).
- If you want to use several WSMs in a network, please follow the instructions in chapter "Using several WSM softwares in a network – multi access function" on page 7.

Launching the WSM software

When you have connected the devices:

▶ Switch on all connected devices.

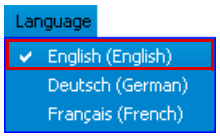
To launch the WSM software:

▶ Double-click on the program icon on the desktop.

Or:

▶ Click on "Start" > "Programs" > "Wireless Systems Manager".
This launches the WSM software and the main window appears.

Setting the language

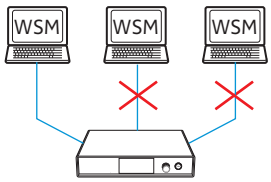


▶ Click on "Language" and select the desired language.
A tick appears in front of the selected language. The language of the software interface is changed.

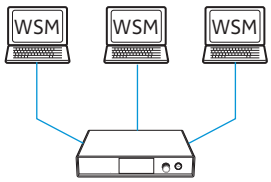
Using several WSM softwares in a network – multi access function

The multi access function allows you to simultaneously network up to 6 computers with the Sennheiser devices. Configurable access rights establish clear procedures and hierarchies for your production.

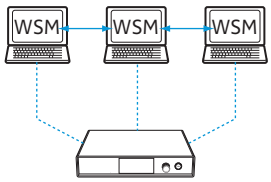
You can install the WSM software on several computers in a network. For the individual application scenarios you can assign different rights for accessing the devices in the network (e.g. for the parameters):



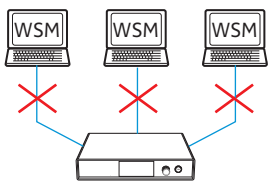
- "Exclusive":
  - All access rights are assigned to only one WSM (see page 9).
  - The access rights cannot be shared with other WSMs.



- "Shared":
  - All WSMs have the same access rights (see page 9).
  - While one WSM is accessing a device (remotely), this device is locked for all other WSMs until this action is terminated.



- "Hands Over":
  - All access rights are assigned to only one WSM (see page 9).
  - However, the access rights can be shared with other WSMs.

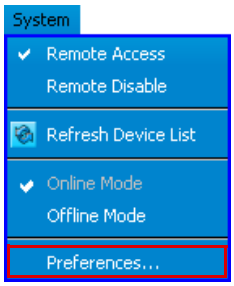


- "Remote Disable" (no access rights):
  - The WSM has no access rights.
  - The WSM is solely used for monitoring.

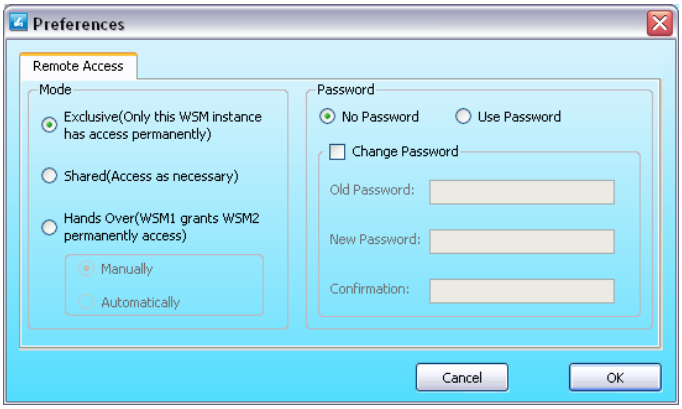
Proceed as follows:

1. First define the access rights for only one WSM software (see the following chapter for details).
2. Adapt the access rights of all other WSMs to the settings of the first one (see "Assigning access rights to additional WSMs" on page 9).
   Or:
   Deny access for all other WSMs (see "Withdrawing access rights from a WSM" on page 10).

Assigning access rights to a WSM



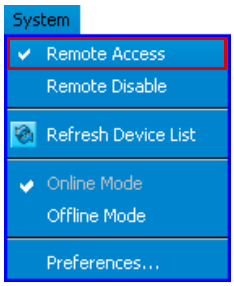
▶ Click on "System" > "Preferences".
The "Preferences" window opens.



▶ Under "Multi PC" select one of the options "Exclusive", "Shared" or "Hands Over".

▶ Click on "OK".
The WSM software obtains the selected access rights.

To be able to access the devices:

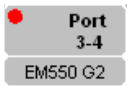


▶ Click on "System" and check if the "Remote Access" command is ticked.

If "Remote Access" is not ticked:

▶ Click on "Remote Access".
You may be requested to enter a password (see page 10). Enter the password if available or contact your system administrator.
A tick appears to the left of the item and a red dot appears in the panels.
You have access to the devices.

- If you have selected "Exclusive" or "Hands Over", red dots appear in the panels. These dots indicate that you have access to these devices.



- To protect the WSM software with a password, proceed as described in chapter "Protecting the WSM with a password" on page 10.

Assigning access rights to additional WSMs

When using additional WSMs in a network, adapt their settings according to the previously selected access rights. If you do not want to assign any access right to a WSM software, just deactivate it (see "Withdrawing access rights from a WSM" on page 10).

Have you selected "Exclusive" for the first WSM?

In this case, the first WSM being registered in the network owns all access rights. In order to avoid any collisions, you should deactivate access to the devices for all other WSMs (see "Withdrawing access rights from a WSM" on page 10).

If you should assign "Exlusive" access right to several WSMs, then access is random. The WSM which registers quicker with the device owns all access rights. This can, under certain circumstances, lead to confusion during operation.

Have you selected "Shared" for the first WSM?

All WSMs with this access right are equal. While one WSM is accessing a device (remotely), this device is locked for all other WSMs until this action is terminated.

- Select "Shared" for all other WSMs in the network that shall obtain access rights. Proceed as described in chapter "Assigning access rights to a WSM" on page 8.

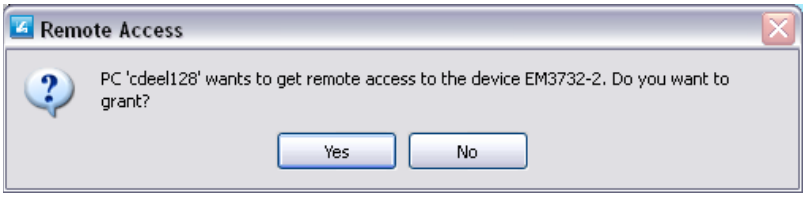
Have you selected "Hands Over" for the first WSM?

First one WSM owns all access rights. However, the access rights can be requested by another WSM with "Hands Over" right. The WSM that owns the access rights receives a message and can then share the access rights with the other WSM.

- Select "Hands Over" for all other WSMs in the network that are authorized to request access rights if required. Proceed as described in chapter "Assigning access rights to a WSM" on page 8.

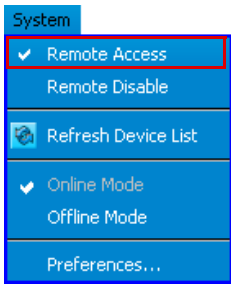
To request the access rights:

- Make the desired settings (e.g. parameters).
  WSM transmits a message to the user of the WSM with the access rights. The user confirms the assignment of access rights. The parameter is transferred to the device.



Withdrawing access rights from a WSM

If you want to use a WSM exclusively for monitoring the system, you can withdraw the right to access the devices as follows:

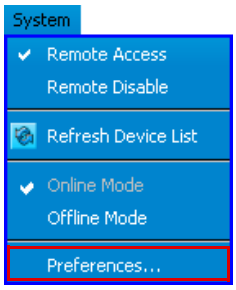


- Click on "System" and check if the "Remote Access" command is ticked.

  If "Remote Access" is ticked:

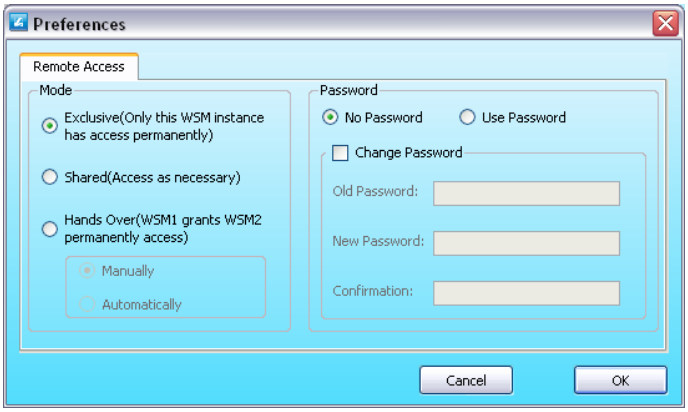
- Click on "Remote Access".
  The tick disappears. The rights to access the devices are, thus, withdrawn.

Protecting the WSM with a password



To protect this WSM and its devices against manipulation, you can enter a password; proceed as follows:

- Click on "System" > "Preferences".
  The "Preferences" window opens.



- Select the "Use Password" radio button.
- To set up a password:
- Enter your password in the "New Password" and "Confirmation" fields.
  The "Old Password" field remains empty.
- Click on "OK".
  After this, the access rights can be modified only by users who know this password.

To change your password:

- Enter your old password in the "Old Password" field.
- Enter your new password in the "New Password" and "Confirmation" fields.
- Click on "OK".
  After this, the access rights can be modified only by users who know this password.

- If you want to disable the password protection, click on the "No Password" radio button.
- If you should have forgotten your password, please contact your local Sennheiser agent.

Setting a device manually via the configuration page – NET 1 only

The NET 1 and the EM 373X receivers are factory preset to automatic IP address obtainment (AutoIP+DHCP mode). This allows collision-free operation within a network. In this mode, the device transmits data to all devices in the network.

Devices with up-to-date firmware additionally have a configuration page. On this page you can assign a static IP address and change the transmission mode to "point-to-point".

In "point-to-point" transmission mode, data is merely exchanged between the device and the "Wireless Systems Manager" (WSM) via a direct point-to-point connection. This allows you to save on network resources; non-involved network devices do not receive any data.

The possible settings are as follows:

Mode	"Auto-IP" possible	Static IP address possible	Transmission mode "point-to-point" possible
AutoIP+DHCP mode (factory preset)	Yes	No	No
Manual mode	No	Yes	Yes

Setting the IP address and the transmission mode

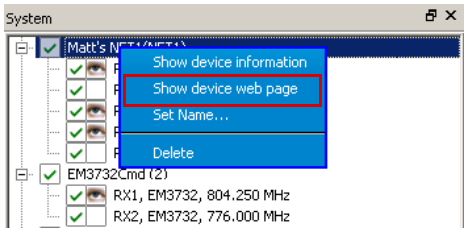
The requirements for configuration are as follows:

- NET 1 has the firmware version 1.3 or later installed
- NET 1 is in AutoIP+DHCP mode (factory preset)
- NET 1 is connected to your PC and not separated by a router
- The version of the "Wireless Systems Manager" software is 2.7 or later

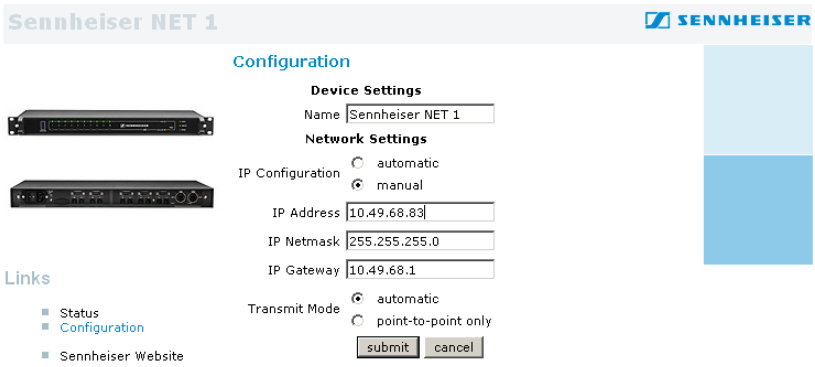
To set the IP address and the transmission mode:

▶ In the system window, click on the "Devices" tab.
If the system window is not shown, click on "View" > "System window".

▶ Right-click the desired device. A shortcut menu appears.



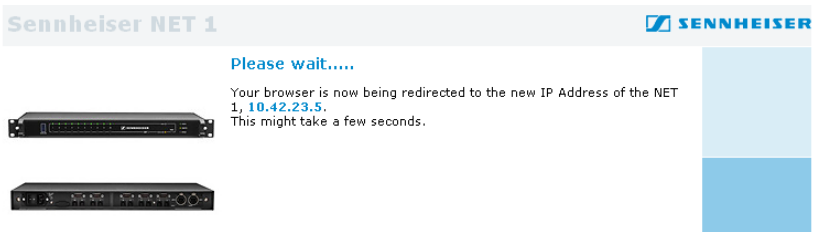
▶ Click on "Show device web page".
Your standard browser opens. The configuration page of the selected device appears.



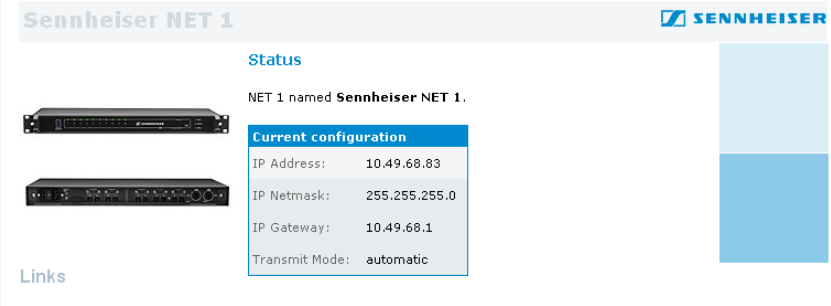
▶ In this window, make the required settings:

"Configuration"	
"Device Settings"	
Name	Designation of the device
"Network Settings"	
"IP Configuration"	• "automatic": The IP address is obtained automatically ("AutoIP+DHCP" mode) • "manual": The IP address is entered in the "IP address" field and is, thus, static
"IP Address"	Desired static IP address for the device
"IP Netmask"	Desired subnet mask for the device
"IP Gateway"	Desired gateway for the device
"Transmit Mode"	Transmission mode: • "automatic": The selected device transmits data to all devices in the network (see "Exception for "automatic"" on page 13). • "point-to-point only": The selected device and the WSM have a direct data connection. The selected device exclusively transmits the data to the WSM.

▶ Click on "submit".
The selected device is being configured. The browser shows a corresponding message.


Sennheiser NET 1
SENNHEISER
Please wait.....
Your browser is now being redirected to the new IP Address of the NET 1, 10.42.23.5.
This might take a few seconds.

Subsequently, the browser automatically indicates the new IP address. The NET 1 shows the specified static IP address.



▶ Close the browser.

A device with a static IP address must be registered with the "Wireless Systems Manager" (WSM) as it is not automatically displayed on the device list (see "Registering a device with a static IP address" on page 13).

Exception for "automatic"

If you have set the "Transmit Mode" to "automatic", the WSM software automatically detects its NET 1. The NET 1 and the WSM, however, must not be separated by a router.
To save network resources and bypass routers: Delete the NET 1 entry from the system window. Then register the NET 1 as described in chapter "Registering a device with a static IP address" on page 13.

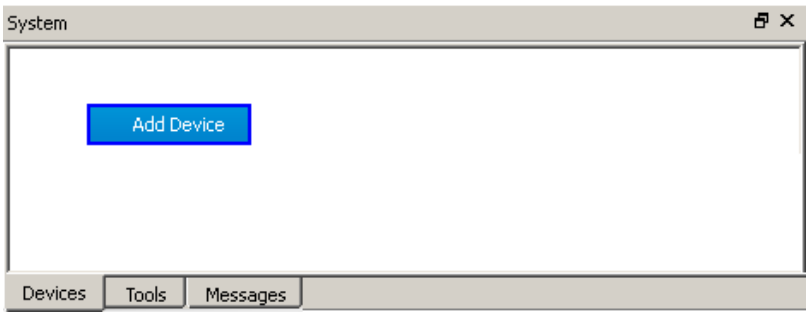
Registering a device with a static IP address

If you have assigned a device a static IP address, this device is not automatically detected by the WSM. You must manually register these devices with each WSM.

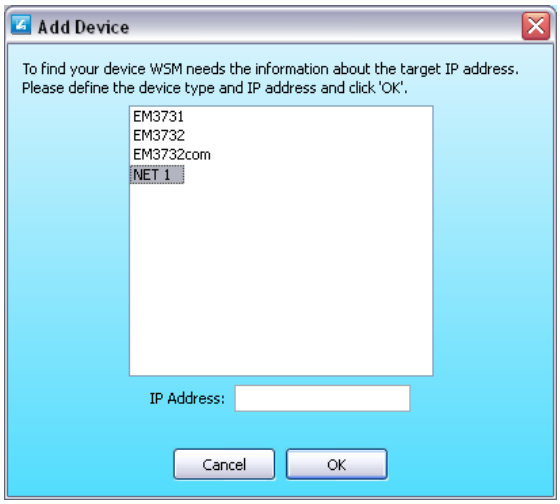
▶ In the system window, click on the "Devices" tab.
If the system window is not shown, click on "View" > "System window".

To register the device with a WSM:

▶ Right-click a free area in the system window.
A shortcut menu appears.



▶ Click on "Add device".
The "Add device" window opens.



▶ Click on the desired device.

▶ In the "IP Address:" field, enter the static IP address.

▶ Click on "OK".
Registration of the device is now complete. The device is marked by a red cross in the system window. The device list is updated after a short time. A green tick appears in front of all detected devices.

If the WSM cannot detect the device with the static IP address, check the settings of the device and of your network.

▶ To register additional devices, repeat the steps carried out up to now.

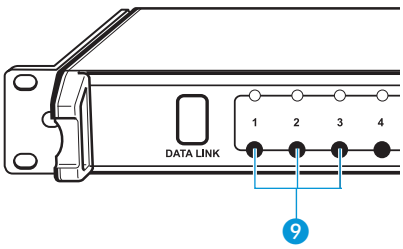
Saving the configuration

To save the registered device with the static IP address:

▶ Click on "File" > "Save Configuration" or "File" > "Save Configuration As...".

If you close the WSM without saving the configuration, you must register the devices with a static IP address again. These devices are not detected automatically.

Resetting the NET 1 to automatic mode



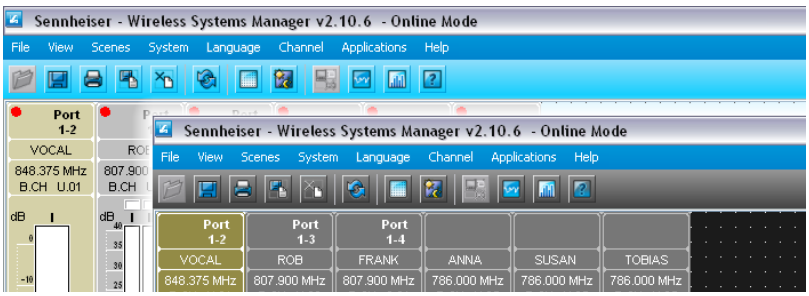
▶ On the NET 1, simultaneously press the channel keys 1, 2 and 3 (9) for approx. 5 seconds.
Ignore any error messages output by the "ERROR" LED. The NET 1 is in automatic mode again ("AutoIP+DHCP mode").

The operator interface of WSM

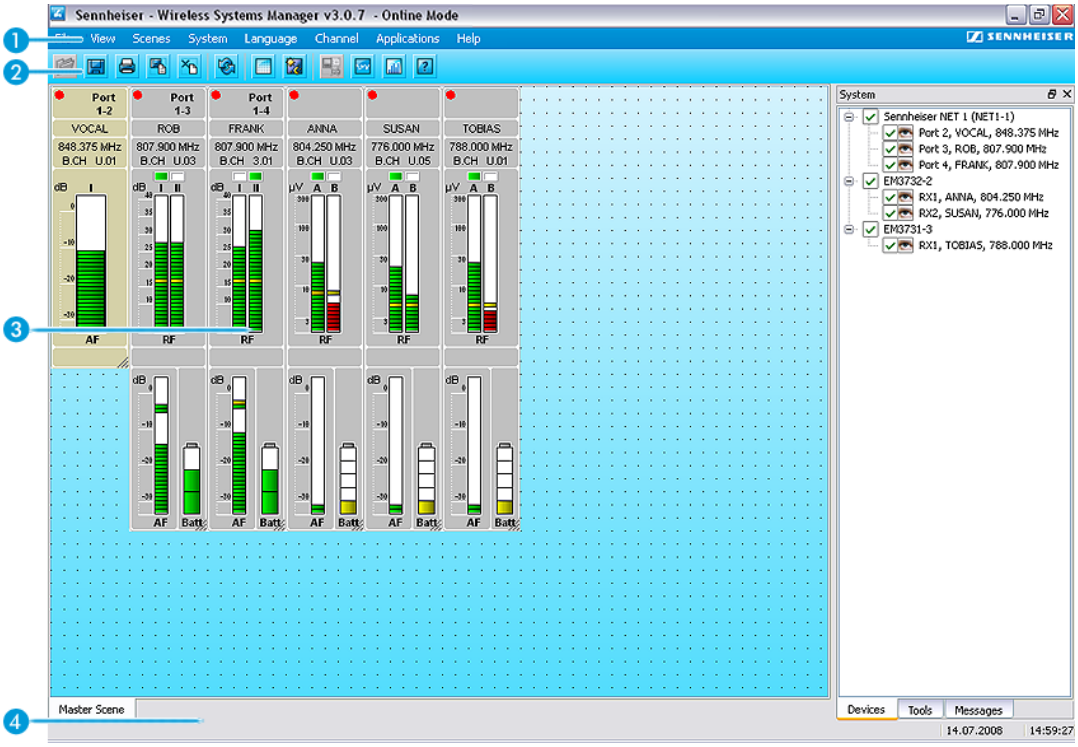
This chapter describes the operator interface of the WSM software. You will become acquainted with the system setup and the individual menus.

The screen shot in this instruction manual shows the WSM in "Day Mode". If you should prefer a dimmed display, e.g. in a dark environment, please activate the "Night Mode" (under menu item "View", select "Night Mode"). The operator interface is dimmed, whereas the windows themselves remain unchanged.

"Day Mode" "Night Mode"



Main window



The main window contains the following regions:

1. Menu bar
2. Symbol bar (tool bar)
3. Display area
4. Status bar

Menu bar

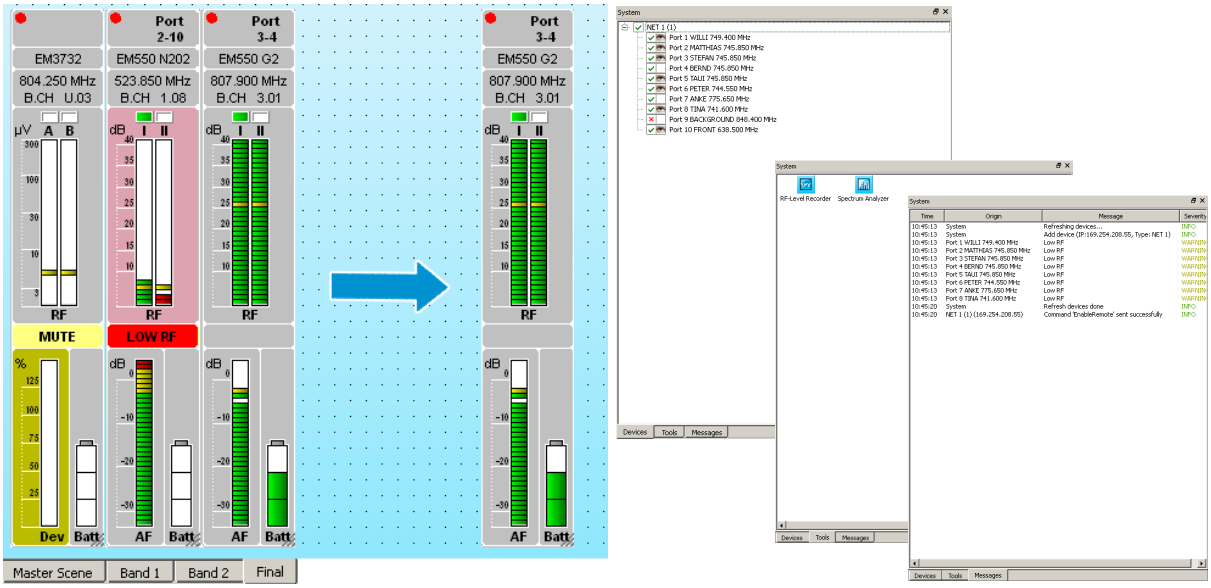
The menu bar ❶ is always visible.
You can select from the following menus (see page 18 and the following): ''File'', ''View'', ''Scenes'', ''System'', ''Language'', ''Channel'', ''Applications'', ''Help''

Symbol bar (tool bar)

You can operate the WSM via the menu bar ❶ and via the buttons in the symbol bar ❷. The symbol bar can be shown or hidden (''View Menu'' > ''Tool Bar'').

Display area

Scene Panels System window with tabs



With the standard settings, the display area ❸ is divided in two. The ''panels'' for the connected devices are displayed on the left; this region is designated as the scene.
The tabs of the system window are displayed on the right.

Scene

In a scene, you can set up and sort panels (see ''Working with panels'' on page 52). Each panel displays a channel or a connected device.

When you create a new configuration, there is first only the ''Master Scene''. For a better overview, you can set up additional scenes (see ''Adding new scenes'' on page 49). You can also copy panels, together with their panel settings, from one scene to another.

System window

The system window can be enlarged or reduced by dragging the border between the scene and the system window. By selecting the menu item "View" > "System Window", you can show or hide the system window.

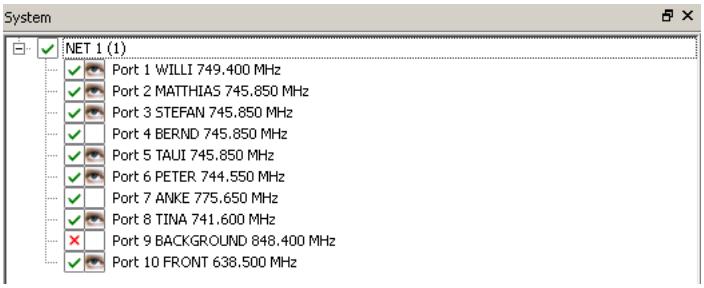
You can toggle between the "Devices" (device list), "Tools" and "Messages" (message list) tabs.

"Devices" tab

The "Devices" tab displays a list of all connected devices.
A NET 1 can be displayed with an individual name, the product name and a consecutive number. If you click on the plus box "+" next to an entry, it will expand and display the next level of connected devices. The devices connected to a NET 1 are displayed with the number of the connection group ("port").
The devices connected to an EM 3732 or EM 3732 Command are displayed with the channel number (RX 1 / RX 2).

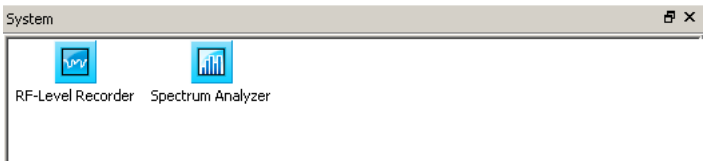
Display	Meaning
	Device is switched on.
	Device is switched on or WSM is in "Offline" mode (see page 26).
	Device is indicated as a panel in the currently selected scene.

You can select one or several devices, drag these, as panels, in the current scene and change the device settings (see "Working with panels" on page 52).


System
NET 1 (1)
Port 1 WILLI 749.400 MHz
Port 2 MATTHIAS 745.850 MHz
Port 3 STEFAN 745.850 MHz
Port 4 BERND 745.850 MHz
Port 5 TAUI 745.850 MHz
Port 6 PETER 744.550 MHz
Port 7 ANKE 775.650 MHz
Port 8 TINA 741.600 MHz
Port 9 BACKGROUND 848.400 MHz
Port 10 FRONT 638.500 MHz

"Tools" tab

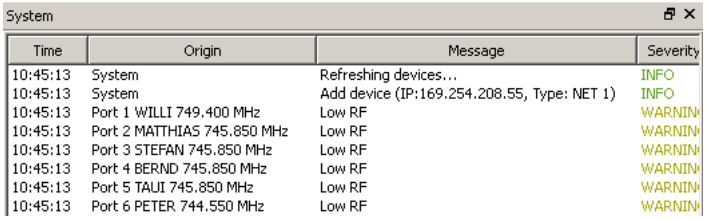
The "Tool" tab has two icons that you can drag in the scene. In each case, a new window appears in the scene (see "Recording the field strength using the tools" on page 62):



- "Spectrum Analyzer"
  This tool and a stationary receiver allow you to check a defined frequency range for signals, to monitor these signals and to record the measured values.
- "RF Level Recorder":
  This tool allows you to record the field strength over a defined period of time.

"Messages" tab

The "Messages" tab displays all messages of the devices. The messages appear in chronological order with their "Origin" and their "Severity".

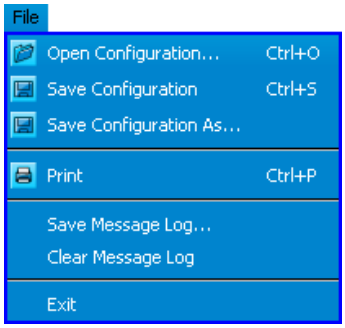

System
Time
Origin
Message
Severity
10:45:13 System Refreshing devices... INFO
10:45:13 System Add device (IP:169.254.208.55, Type: NET 1) INFO
10:45:13 Port 1 WILLI 749.400 MHz Low RF WARNIN
10:45:13 Port 2 MATTHIAS 745.850 MHz Low RF WARNIN
10:45:13 Port 3 STEFAN 745.850 MHz Low RF WARNIN
10:45:13 Port 4 BERND 745.850 MHz Low RF WARNIN
10:45:13 Port 5 TAUI 745.850 MHz Low RF WARNIN
10:45:13 Port 6 PETER 744.550 MHz Low RF WARNIN

Status bar

The last message from the devices is displayed on the left in the status bar 4.
The current date and time are displayed on the right.

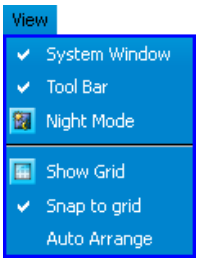
Overview of menus

The "File" menu



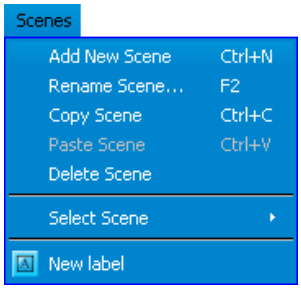
Menu item	Function of the menu item	Button
"Open Configuration..."	Opens a saved configuration.	
"Save Configuration"	Saves the current configuration under the same name.	
"Save Configuration As..."	Saves the current configuration under a new name.	
"Print"	Prints the current configuration as graphic or text.	
"Save Message Log..."	Saves the messages in the system window as a file ("Messages" tab).	
"Clear Message Log"	Deletes the messages from the system window ("Messages" tab).	
"Exit"	Terminates the "WSM".	

The “View” menu



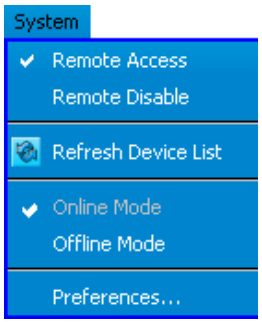
Menu item	Function of the menu item	Button
“System Window”	Shows or hides the system window.	
“Tool Bar”	Shows or hides the tool bar.	
“Night Mode”/ “Day Mode”	Changes to night mode or restores the day mode.	
“Show Grid”	Shows or hides the grid for aligning the panels.	
“Snap to grid”	Aligns the panels to the grid if you move the panels.	
“Auto Arrange”	Automatically arranges the panels side by side and one below the other, depending on the screen size.	

The “Scenes” menu



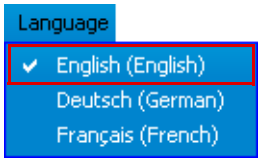
Menu item	Function of the menu item
“Add New Scene”	Creates a new scene.
“Rename Scene...”	Changes the name of the selected scene.
“Copy Scene”	Copies the current scene.
“Paste Scene”	Pastes the current scene.
“Delete Scene”	Deletes the selected scene from the display. The configuration of the devices is retained.
“Select Scene”	Changes to a different scene.
“New Label”	Creates a comment field in the selected scene.

The “System” menu



Menu item	Function of the menu item	Button
“Remote Access”	Activates or deactivates access to the parameter settings of the devices (see page 59).	
“Refresh Device List”	Updates (refreshes) the device list in the system window (“Devices” tab). New devices are displayed, previously moved or deleted panels are repositioned in the display area.	
“Online Mode”	Enables operation of the connected devices (live operation).	
“Offline Mode”	Must be activated for the pre-configuration (“Device Configuration”) (see page 26). Device connections will be interrupted.	
“Preferences...”	For setting the access rights of different WSM in a network and for activating password protection (see page 7).	

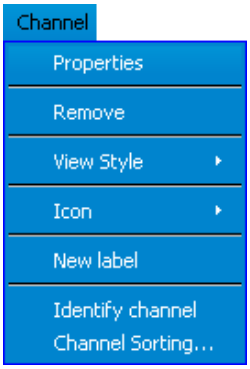
The “Language” menu



Menu item	Function of the menu item
“English”	Changes the language of the software interface.
“Deutsch”	
“Français”	

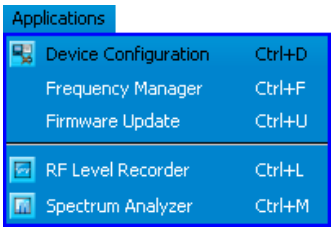
The "Channel" menu

The following menu items can vary and depend on whether you have selected one panel or several panels.



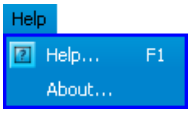
Menu item	Function of the menu item
"Properties" / „Common Properties"	Displays the parameters of the selected device or the common properties of the selected devices.
"View Style"	Displays a submenu with a selection list of three different graphical representations for the "receiver" panels (see page 53).
"Icon"	Displays a submenu with a selection list of different icons and numbers (see page 54). Pictures can also be used.
"New Label"	Creates a label for comments on the selected panel (see page 57).
"Panel Color..."	Assigns a color to the border of the panel (see page 54).
"Use Panel Settings As Default"	Saves settings such as panel style, size, icon or number and color of the selected panel. These standard panel settings can be applied to other panels (see page 54).
"Use Default Panel Settings"	Applies the last saved standard panel settings to the selected panel (see page 51).
"Remove/Cut"	Deletes the selected panel from the display area. The panel can be pasted to another scene. The settings of the panel and the device settings are retained (see page 56).
"Copy"	Copies the selected panel to the clipboard (see page 56).
"Paste"	Copies the panel from the clipboard to the selected scene (see page 56).
"Identify Channel"	Displays the device belonging to the panel (for EM 3732-II and stationary devices of the ew G3 and 2000 series; see page 57).
"Channel Sorting..."	Sorts the sequence of panels in a scene according to user default (for EM 3732-II and stationary devices of the ew G3 and 2000 series; see page 56).

The “Applications” menu



Menu item	Function of the menu item	Button
“Device Configuration”	Device pre-configuration in offline mode (see page 26).	
“Frequency Manager”	Detection and assignment of unused frequencies for the system. Calls up the “Frequency Management Wizard” (see page 37).	
“Firmware Update”	Starts the firmware update (see page 32).	
“RF Level Recorder”	Monitors the field strength of a receiver’s diversity channels over a defined period of time and records the measured values (see page 65).	
“Spectrum Analyzer”	Checks a defined frequency range for signals; monitors these signals and records the measured values using a stationary receiver (see page 62).	

The “Help” menu

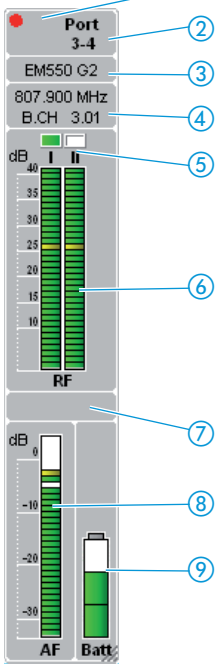


Menu item	Function of the menu item	Button
“Help...”	Opens a window in which the online help is displayed.	
“About...”	Opens a window in which the version number is displayed.	

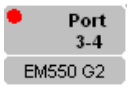
Layout of the panel

Every panel displays a stationary device. The graphical representation of the panel depends on the device type and the settings made under “View Style” in the “Channel” menu. For details on the possible settings, see “Working with panels” on page 52.

The following screenshot shows an example panel:



① Icon / number / picture
② Port display / Word clock synchronization display
③ Name of the device
④ Frequency and channel display
⑤ Diversity display
⑥ Field strength display
⑦ Status field / Display of the audio outputs AF and COM
⑧ Modulation display
⑨ Battery status



A red dot in the panel indicates that you have access rights for these devices (see "Using several WSM softwares in a network – multi access function" on page 7).

① Icon

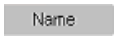
The top left corner of the panel can be provided with an icon, a number or a picture (see "Selecting an icon for a panel" on page 54).

② Port display/ Word clock synchronization display

Depending on the connected device, one of the following displays appears:

Display	Peculiarity	Meaning
Port 1-5	NET 1 only	"1" means: the NET 1 is the first device in the device list ("Devices"). "5" means: the device is connected to connection group 5 ("port") of the NET 1.
Clock lights up	EM 373X receivers only	An external word clock generator is connected and switched on.
Clock flashes		The receiver is not synchronized with the word clock generator (see instruction manual of the device).
		The receiver is working with the internal word clock generator.
	ew G3 series	No display appears.

③ Name of the device



The name set on the device is displayed. The name can be changed in the "Properties" window (see page 59).

④ Frequency and channel display

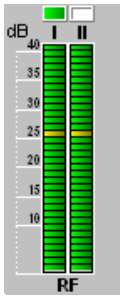
The frequency of the device appears below its name. The channel is displayed below the frequency (see ""Easy Setup" frequency management" on page 37 and "Working with panels" on page 52).

⑤ Diversity display

The active antenna is displayed in green.
The labeling of the diversity sections depends on the device type:

3000 series receivers:	"A" and "B"
ew G3/G2 and 2000 series receivers:	"I" and "II"

⑥ Field strength display (RF)

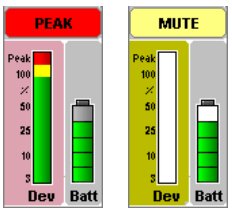


The bar graphs indicate the current field strength. The horizontal yellow line indicates the set squelch threshold (see "Working with panels" on page 52).

If the field strength is below the squelch threshold, the bar appears in red and the audio output is muted.

⑦ **Status field** / Display of the audio outputs AF and COM

If a threshold value on the device is exceeded or undershot, a message appears in the status field.



The messages are highlighted in different colors. The part of the panel to which the message refers is also highlighted.

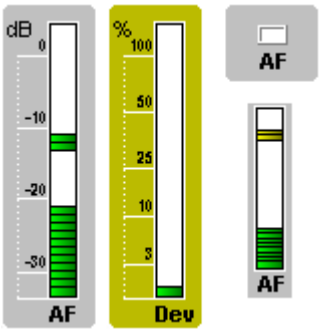
Display	Color	Meaning of the message
MUTE	yellow	The device is muted.
PEAK	red	The device is overmodulated.
LOW BATT	red	The device's battery is almost flat.
LOW RF	red	The squelch threshold is almost reached.

The message also appears in the system window ("Messages" tab) and in the status bar.

With the EM 3732 Command twin receiver, the status field appears in alternation with the current status of the audio and command outputs (see EM 373X instruction manual):

Display	Audio output...	is...
AF COM	AF out	switched on
	Command	switched on
AF COM	AF out	switched off
	Command	switched on
AF COM	AF out	switched on
	Command	switched off
AF COM	AF out	switched off
	Command	switched off

⑧ Modulation display (Deviation/AF)



Level indicator for the audio level at the transmitter.
The threshold values are displayed in color in the modulation display. A yellow section in the bar graph indicates that the transmitter is fully modulated. An additional red section indicates overmodulation. If this occurs, reduce the modulation level on the transmitter.

The modulation displays depend on the device type:

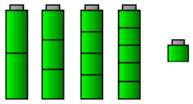
3000 series receivers:	"Dev"
ew G3/G2 and 2000 series receivers and stationary transmitters:	"AF"

With these receivers, the modulation can be shown in different views (see "Changing the graphical representation of panels" on page 53):

"Variant" 1 and 3: The modulation is shown as a bar graph.

"Variant" 2: The modulation is shown as a colored box.
The display changes between three colors, depending on the state.

⑨ Battery status

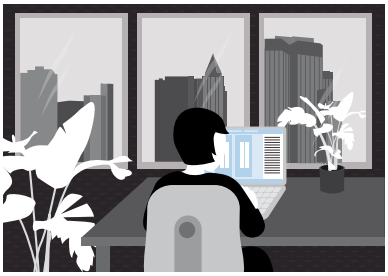


The battery symbol indicates the charge status of the batteries. The graphical representation depends on the device and battery type (primary cells or accupack).

Color	Meaning
green	The battery is fully charged.
yellow	The battery is about half discharged.
red	The critical level is reached. The battery symbol flashes red. Additionally, a message appears in the panel, the system window ("Messages" tab) and the status bar.

The remaining accupack capacity is additionally displayed for ew G3 and 2000 series devices.

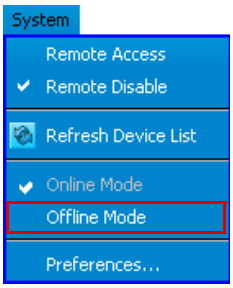
Configuring the system in Offline Mode



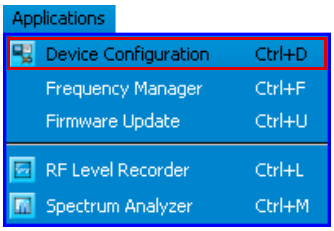
The WSM allows you to configure your wireless system in Offline Mode where and whenever you want. The set parameters can directly be transferred to your Sennheiser devices before the show. This helps you to save valuable set-up time at the production venue.

Creating a new configuration

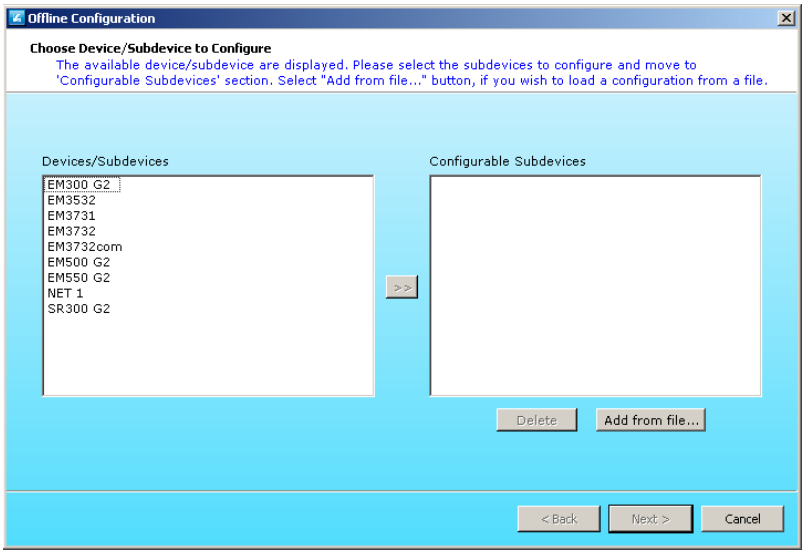
Changing to Offline Mode



- Click on "System" > "Offline Mode".
  If devices are connected, the link is interrupted. The corresponding panels will be highlighted in gray. The devices in the "Devices" tab of the system window are marked with a red "x".



- Click on "Applications" > "Device Configuration".
  The following window opens.



Adding devices to the list

The window contains two lists. The left-hand list displays all WSM compatible devices. The right-hand list displays your current device selection.

To add devices to the list:

- In the left-hand list, click on a receiver or a transmitter (IEM).
- Click on ">>".
  The selected receiver or transmitter (IEM) appears in the right-hand list and is included in the system. Add any number of devices to your system (max. five NET 1).
- Click on "Next >".
  The following window appears.

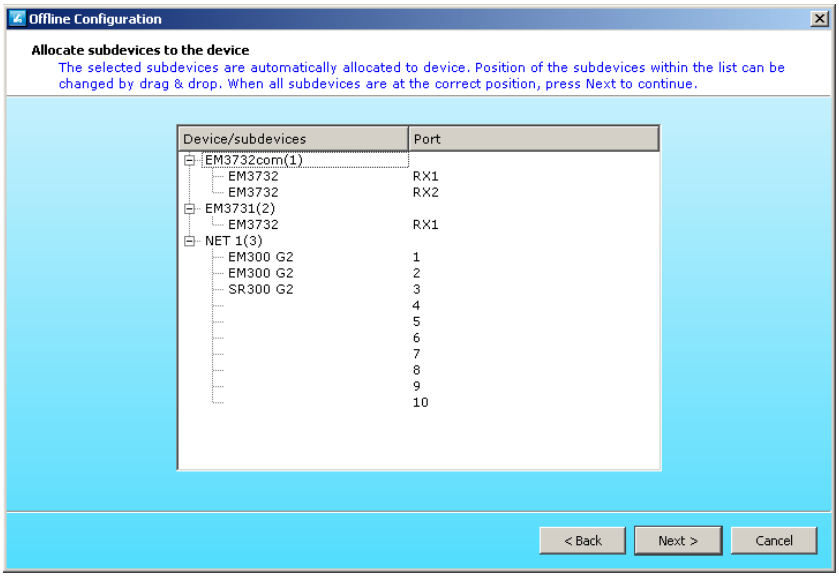
Loading a list

If you wish to change an existing list, you can load this list (“Add from file...”) and then add devices to or delete devices from the list.

Assigning receivers or transmitters (IEM) to different NET 1

The selected receivers and transmitters (IEM) are automatically assigned to different NET 1 (except EM 373X).
Devices which occupy two ports are displayed twice:

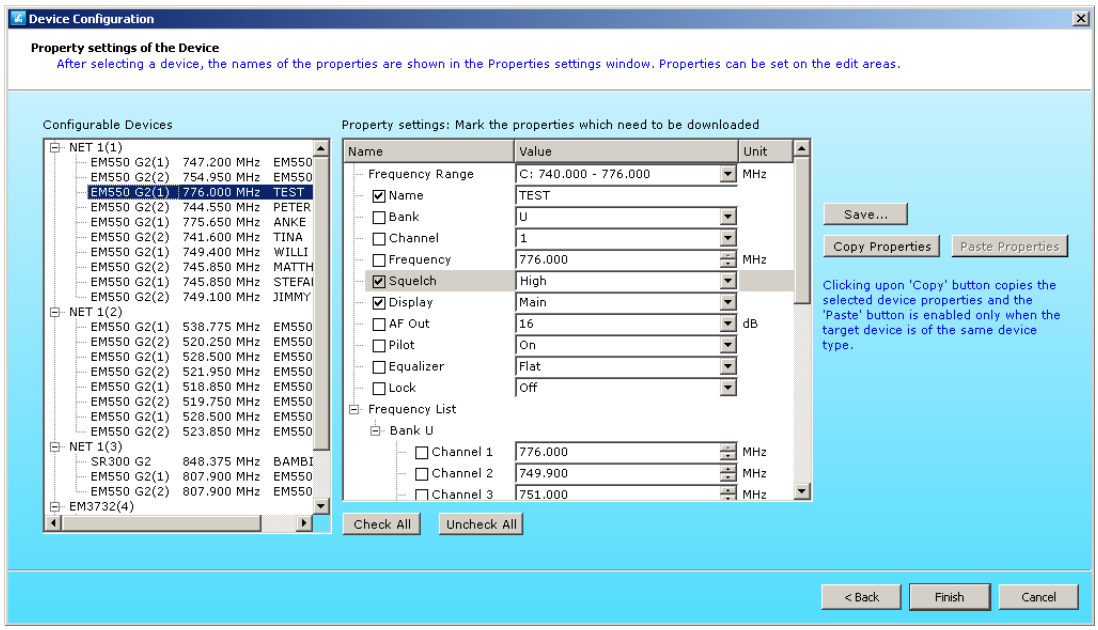
NET 1	EM 3732/EM 3732 Command
• EM 550 (1)	• RX 1
• EM 550 (2)	• RX 2



To assign a receiver or transmitter (IEM) to a different device or port:

- Click on the receiver or transmitter (IEM).
- Keep the mouse button pressed and drag your selection to the desired port.
  The receiver or transmitter (IEM) appears in the corresponding position in the list.
- After you have assigned all receivers or transmitters (IEM), click on “Next >”.
  The following window appears.

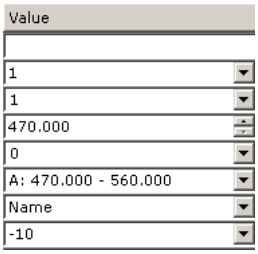
Pre-configuring device parameters


Device Configuration
Property settings of the Device
After selecting a device, the names of the properties are shown in the Properties settings window. Properties can be set on the edit areas.
Configurable Devices
Property settings: Mark the properties which need to be downloaded
Name
Value
Unit
Save...
Copy Properties
Paste Properties
Clicking upon 'Copy' button copies the selected device properties and the 'Paste' button is enabled only when the target device is of the same device type.
Check All
Uncheck All
< Back
Finish
Cancel

Changing device parameters

▶ In the left-hand list, click on a device.
The "Property settings" list displays the device parameters.
The parameters displayed depend on the type of the device.
The left-hand column (Name) displays the device parameters. The two columns on the right of it display the corresponding values (Value) and units (Unit).

- If you are changing the settings for the "Frequency", "Bank" and "Channel", the "Frequency" setting is prior-ranking. The bank and channel are selected according to the selected frequency.
- Specific information on the parameters can be found in the instruction manuals for the devices.
- The settings of individual devices can also be changed later when the devices are already connected (see "Changing the parameters of a device" on page 60).



▶ Click on the entry field or on the arrow next to the corresponding parameter.
A flashing cursor or a selection list appears.

▶ Enter the desired value or select a value from the selection list..

Make sure that the device type and the frequency range match. Information on the frequency range is given on the type plate.

Copying parameters and pasting them to other devices

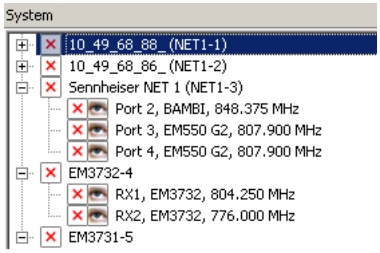
- Click on the device whose parameters you want to copy.
- Click on "Copy Properties" to copy the parameters.
- Click on the device to which you want to assign the copied parameters.
- Click on "Paste Properties" to paste the copied parameters to the device.

Saving parameters

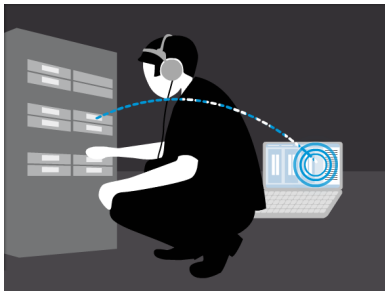
- Click on "Save".
  The "Save File" dialog box appears.
- Select the folder in which you want to save the file.
- In the dialog box, enter a name for the "wsm" file.
- Click on "Save".
  The data is saved. The dialog box closes.

After you have set all parameters:

- Click on "Finish".
  The dialog box closes.
  On the "Device" tab in the system window, the configured devices appear. To the left of them a red "x" is shown.

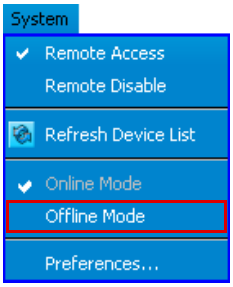


Transferring the configuration to the devices

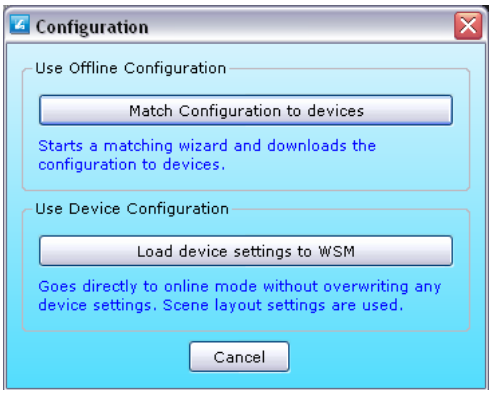


- Connect the devices.
- Switch on all devices.

To change to Online mode:



- Click on "System" > "Online Mode".
  The following window appears.


Configuration
Use Offline Configuration
Match Configuration to devices
Starts a matching wizard and downloads the configuration to devices.
Use Device Configuration
Load device settings to WSM
Goes directly to online mode without overwriting any device settings. Scene layout settings are used.
Cancel

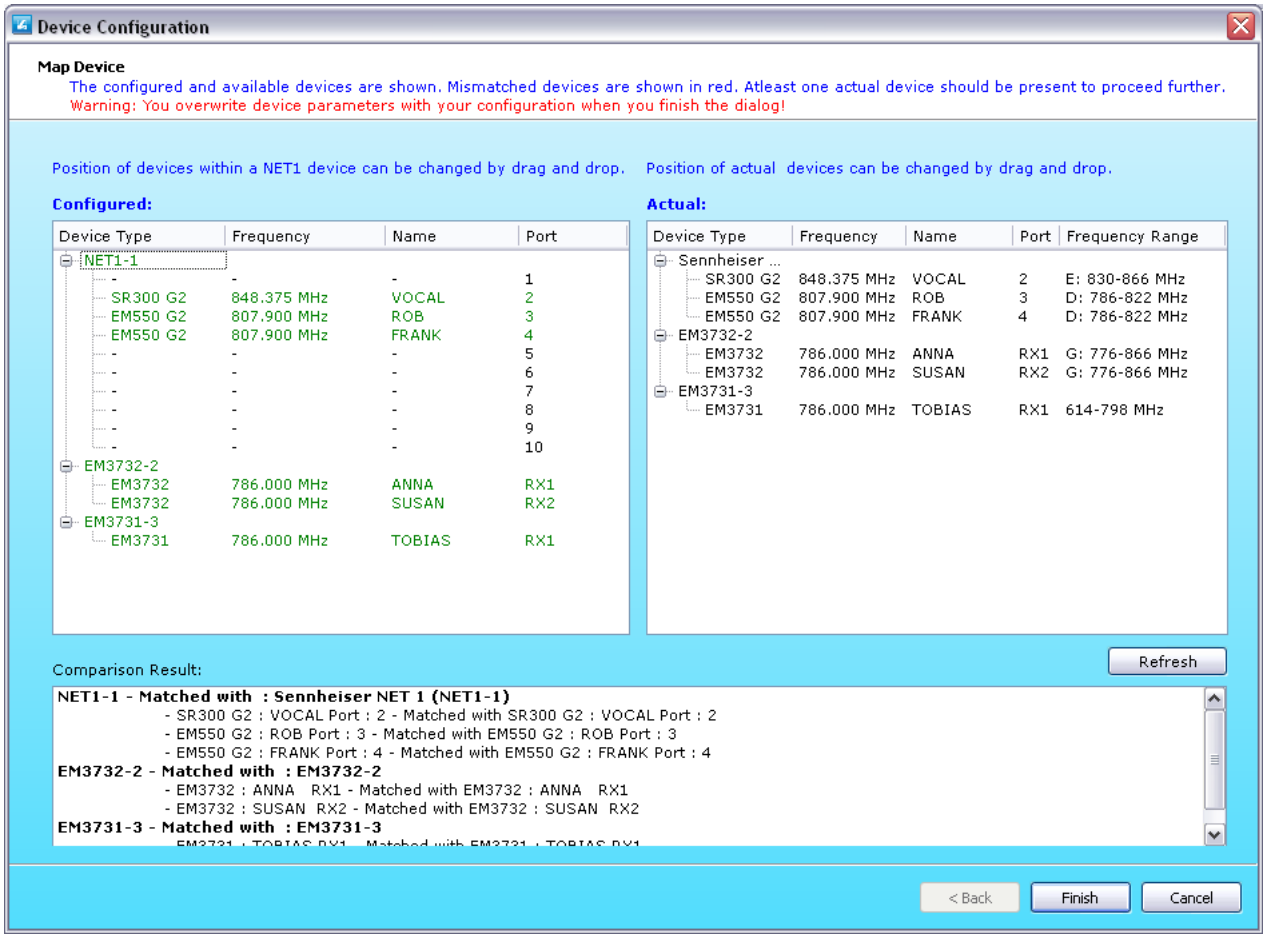
You can use either the parameters from the offline configuration or the device parameters.

If you want to use the device parameters:

▶ Click on "Load device settings to WSM".
The WSM takes over the device parameters. The offline configuration is not used in this case.

If you want to transfer the set parameters from the offline configuration:

▶ Click on "Match Configuration to devices"
The connected devices are searched. The following window appears.


Device Configuration
Map Device
The configured and available devices are shown. Mismatched devices are shown in red. Atleast one actual device should be present to proceed further.
Warning: You overwrite device parameters with your configuration when you finish the dialog!
Position of devices within a NET1 device can be changed by drag and drop.
Position of actual devices can be changed by drag and drop.
Configured:
Actual:
Device Type
Frequency
Name
Port
Frequency Range
NET1-1
SR300 G2 848.375 MHz VOCAL 2
EM550 G2 807.900 MHz ROB 3
EM550 G2 807.900 MHz FRANK 4
EM3732-2
EM3732 786.000 MHz ANNA RX1
EM3732 786.000 MHz SUSAN RX2
EM3731-3
EM3731 786.000 MHz TOBIAS RX1
Sennheiser ...
SR300 G2 848.375 MHz VOCAL 2 E: 830-866 MHz
EM550 G2 807.900 MHz ROB 3 D: 786-822 MHz
EM550 G2 807.900 MHz FRANK 4 D: 786-822 MHz
EM3732-2
EM3732 786.000 MHz ANNA RX1 G: 776-866 MHz
EM3732 786.000 MHz SUSAN RX2 G: 776-866 MHz
EM3731-3
EM3731 786.000 MHz TOBIAS RX1 614-798 MHz
Comparison Result:
Refresh
NET1-1 - Matched with : Sennheiser NET 1 (NET1-1)
- SR300 G2 : VOCAL Port : 2 - Matched with SR300 G2 : VOCAL Port : 2
- EM550 G2 : ROB Port : 3 - Matched with EM550 G2 : ROB Port : 3
- EM550 G2 : FRANK Port : 4 - Matched with EM550 G2 : FRANK Port : 4
EM3732-2 - Matched with : EM3732-2
- EM3732 : ANNA RX1 - Matched with EM3732 : ANNA RX1
- EM3732 : SUSAN RX2 - Matched with EM3732 : SUSAN RX2
EM3731-3 - Matched with : EM3731-3
< Back
Finish
Cancel

The left-hand list displays the pre-configured devices ("Offline Configuration"). The right-hand list displays all currently connected devices. The device assignment appears in the "Comparison Result" window.

The assigned devices are highlighted in the list on the left.

Color	Meaning
green	Configuration matches the connected device
red	No suitable device found (e.g. differing frequency range)
black	Device found on a different port and assigned automatically

If devices are marked black or red, you can:

- re-connect the receivers according to the configuration,
- change the configuration (“< Back”)
- manually assign the devices connected to the NET 1 in this window

To connect the devices according to the configuration:

▶ Connect all devices marked black to the corresponding ports.

▶ Click on “Refresh” to update the list.

To re-assign the devices connected to the NET 1:

▶ In the “Configured” column on the left, click on the connected device.

▶ Keep the mouse button pressed and drag your selection to the desired NET 1 port.
The device appears on the selected port. If you have selected the correct port, the device is displayed in green.

▶ Click on “Next >”.
The configuration is transferred to the devices. This may take some minutes.
In the “Devices” tab of the system window, the configured devices are shown with a green tick.

Updating the firmware of the devices

The "Wireless Systems Manager" allows you to update the firmware of the NET 1 and of the connected microphone or monitoring systems.

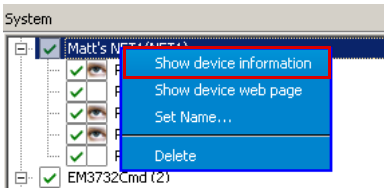
A compatible firmware is included on the CD ROM. You can also download the latest firmware updates from the Sennheiser homepage at www.sennheiser.com.

Displaying the firmware versions of the devices

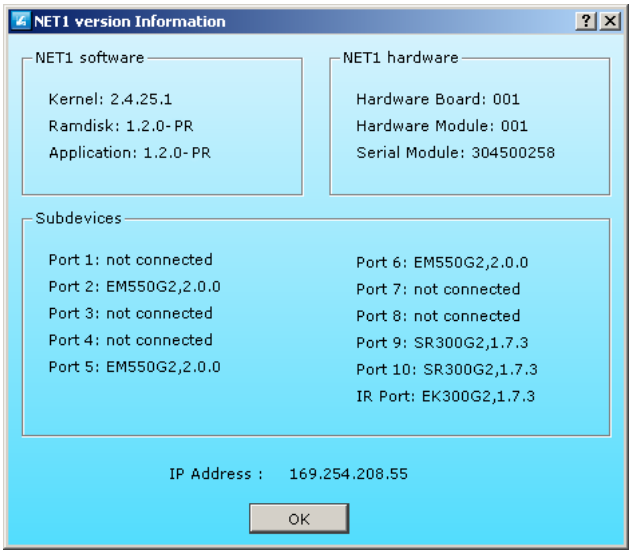
You can display the firmware versions of the connected devices.

The example given is for the NET 1:

- In the system window, click on the "Devices" tab.
- If necessary, place the portable device in front of the infrared interface of the NET 1.



- In the system window, right-click on "NET1".
  A shortcut menu appears.
- Click on "Show device information".
  The "NET1 version Information" window opens.



Display	Meaning		
"NET 1 software"	The entry "Application" shows the firmware version of the selected NET 1. The other version numbers are only relevant to the Sennheiser Service.		
"NET 1 hardware"	The displayed version numbers are only relevant to the Sennheiser Service.		
"Subdevices"	Displays the connected devices as follows:		
	"Port 4"	"EM550G2"	"2.0.0"
	Channel 4 on the NET 1	Stationary device	Firmware version
	"IR Port"	"EK300G2"	"1.7.3"
	Device in front of the infrared interface of the NET 1	Portable device	Firmware version
"IP Address"	Displays the network address (IP) of the NET 1.		

▶ Click on "OK".
The dialog box closes.

Downloading the latest firmware update from the Internet

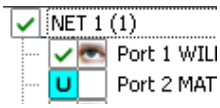
Sennheiser is continuously improving the WSM software. We therefore recommend that you register on our homepage at `www.sennheiser.com`. You can then regularly receive a newsletter providing information on the WSM and the latest firmware versions.

▶ Select the current SENNPKG file on the Sennheiser homepage at `www.sennheiser.com` and start the download.

▶ Click on "Open".
The file is automatically saved in the "`New Releases`" subfolder of the program folder. If this folder already contains a file, this file is moved to the "Archive" folder.

Preparing the firmware update

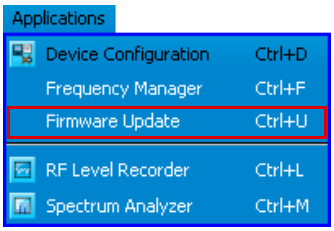
Only the firmware is updated, the device settings remain the same. The firmware in the EM 3532 twin receiver is not updated.



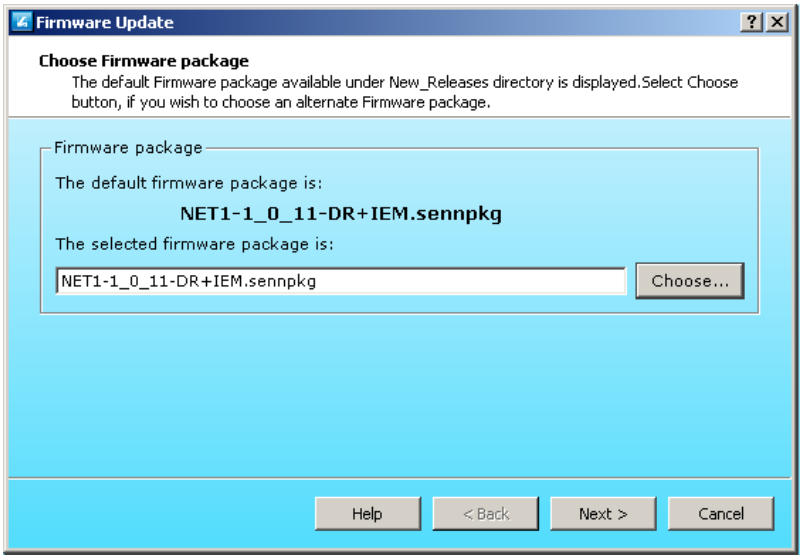
Devices that are marked with a "U" in the "Devices" tab of the system window (see diagram on the left) have an outdated firmware that must be updated.

To prepare the firmware update:

- Switch on all receivers and transmitters.
  Switched-off devices will be ignored during update.



- Click on "Applications" > "Firmware Update".
  The "Firmware Update" window opens.



If there is a new firmware version available in the "`New Releases`" folder of the program folder, it is displayed in the "The selected firmware package is:" field.
You can select a SENNPKG file for the NET 1 or an EM 373X receiver. If you have connected both devices, update the firmware of the devices one after the other. Close the "Firmware Update" window and then repeat the update procedure for the other device.

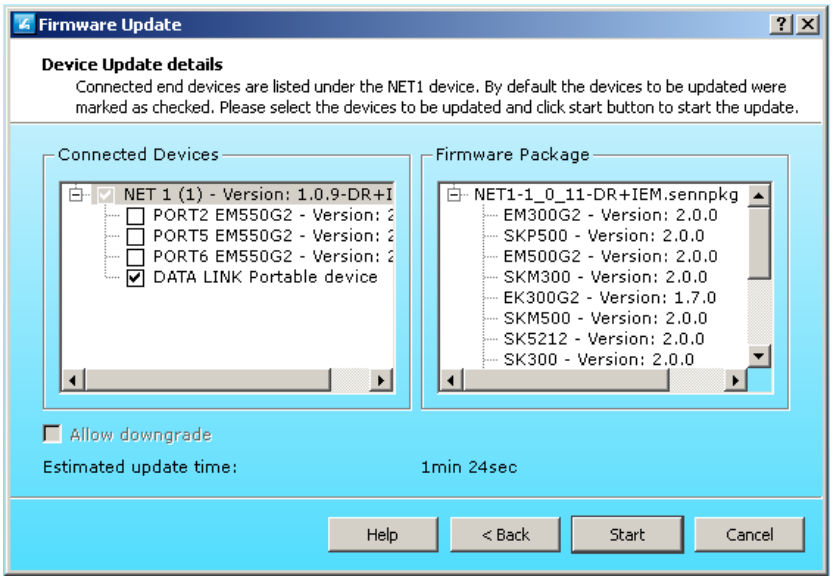
To use the firmware version from the "`New Releases`" folder:

- Click on "Next >".
  The connection to the devices is checked.

To use another version:

- Click on "Choose...".
  A dialog box appears.
- Select the desired SENNPKG file and confirm by clicking on "OK".
  The dialog box closes.
- Click on "Next >".

▶ The connection to the devices is checked.


Firmware Update
Device Update details
Connected end devices are listed under the NET1 device. By default the devices to be updated were marked as checked. Please select the devices to be updated and click start button to start the update.
Connected Devices
NET 1 (1) - Version: 1.0.9-DR+I
PORT2 EM550G2 - Version:
PORT5 EM550G2 - Version:
PORT6 EM550G2 - Version:
DATA LINK Portable device
Firmware Package
NET1-1_0_11-DR+IEM.sennpkg
EM300G2 - Version: 2.0.0
SKP500 - Version: 2.0.0
EM500G2 - Version: 2.0.0
SKM300 - Version: 2.0.0
EK300G2 - Version: 1.7.0
SKM500 - Version: 2.0.0
SK5212 - Version: 2.0.0
SK300 - Version: 2.0.0
Allow downgrade
Estimated update time:
1min 24sec
Help
< Back
Start
Cancel

The "Firmware Package" box on the right displays all available firmware versions from the selected SENNPKG file. The "Connected Devices" box on the left displays the corresponding connected devices.

Devices with an older firmware version are automatically ticked.

To not update the firmware in a device:

▶ In the "Connected Devices" window, click on the checkbox of the device. The tick is removed. The firmware is not updated.

If you want to transmit an older firmware version to a device:

▶ Click on the "Allow downgrade" checkbox.
A tick appears.

▶ In the left column, click on the checkbox of the device.
A tick appears. The older firmware version will be transmitted to the devices during firmware update.

Updating the firmware in the devices

The firmware is automatically updated in the following order:

NET 1	EM 373X receivers
1. NET 1	1. Stationary devices
2. Stationary devices	2. Portable devices
3. Portable devices	

The firmware in the 3000 and 5000 series transmitters (see page 4) can also be updated via the Net 1's infrared interface.

CAUTION!

Risk of data loss if transfer is interrupted during firmware update!

Data may be lost if the transfer is interrupted. The devices may also be damaged as a result.

- When updating the firmware, do not interrupt any device connection to the NET 1 or to the stationary devices.
- Do not disconnect power from the devices. Preferably use fully charged batteries for the portable devices!
- Since the updating process takes about 40 seconds, firmly position the portable devices in front of the infrared interface.
- Place the portable devices in front of the infrared interface of the NET 1 until a corresponding message appears in the wizard window.

To start the firmware update:

- Click on "Start".
- Follow the instructions of the wizard..

After the firmware in the NET 1 has been updated, the device restarts. This can take up to one minute.

Frequency management

Using the frequency management you can detect unused frequencies that you can then allocate to the devices.

You can perform either an "Easy Setup" or a "Professional Setup".

- "Easy Setup" checks the factory preset frequencies during a scan. These preset frequencies are intermodulation-free (see "Intermodulation" on page 80).
- "Professional Setup" allows you to check all frequencies within a defined frequency range. You can store the detected frequency lists from "Professional Setup" and load them again for preconfiguring the system (see page 26).

Easy Setup (see page 37)	Professional Setup (see page 45)
"Easy Setup" can be performed with or without a frequency preset scan. During the frequency preset scan: • the factory preset frequencies (presets) and • the frequencies stored in the channel bank "U" of the selected receiver are checked. The spectrum is only checked selectively.	"Professional Setup" can be performed with or without a frequency scan. During the frequency scan: • the complete spectrum of the selected frequency range is checked. This allows you to detect interfering frequencies from external devices and to take them into account in the planning of the system.
You can allocate unused frequencies of the selected receiver (presets) to the stationary devices.	You can allocate compatible frequencies to the stationary devices.

"Easy Setup" frequency management

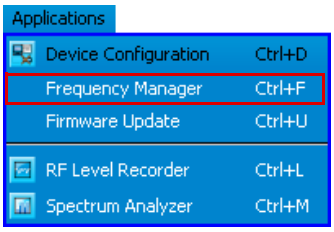
Using the "Easy Setup" frequency management, you can:

- determine the allocation of frequencies in the channel banks of the devices connected to the NET 1,
- detect occupied frequencies,
- allocate unused frequencies to the devices..

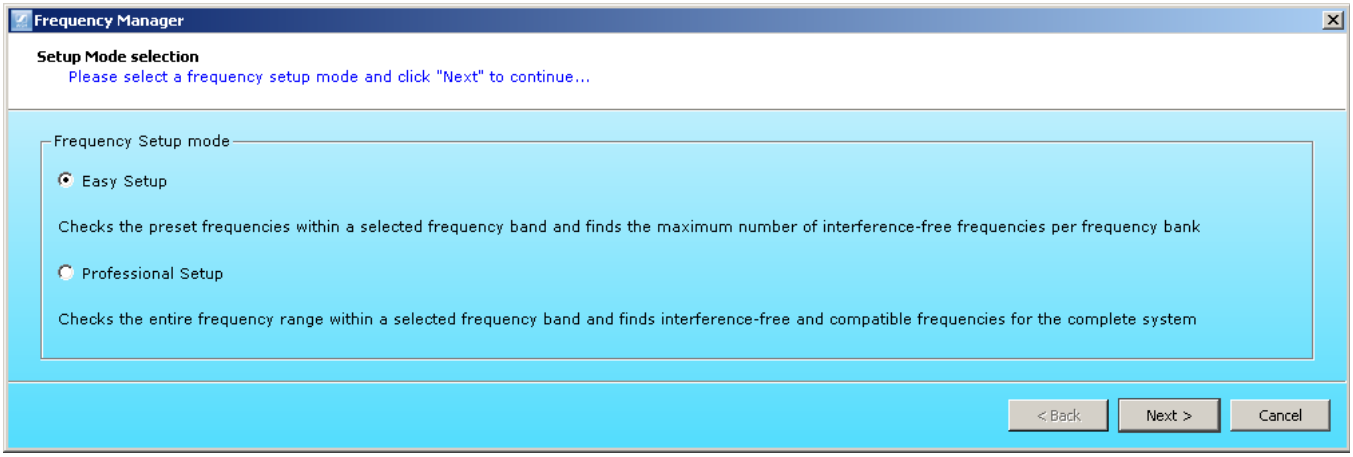
You can also configure individual device parameters after "Easy Setup" (see "Working with panels" on page 52).

Launching the "Easy Setup" frequency management

▶ Switch off all portable transmitters for which you want to find unused frequencies. The WSM automatically mutes the stationary transmitters.



▶ Click on "Applications" > "Frequency Manager".
The "Frequency Manager" window opens.

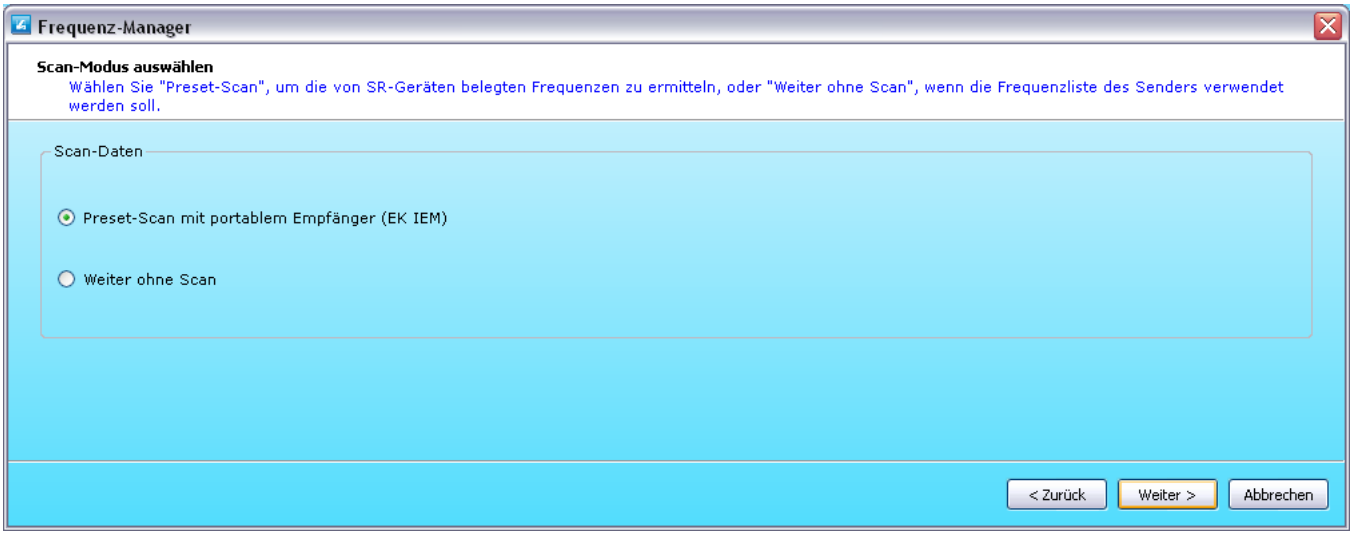

Frequency Manager
Setup Mode selection
Please select a frequency setup mode and click "Next" to continue...
Frequency Setup mode
Easy Setup
Checks the preset frequencies within a selected frequency band and finds the maximum number of interference-free frequencies per frequency bank
Professional Setup
Checks the entire frequency range within a selected frequency band and finds interference-free and compatible frequencies for the complete system
< Back
Next >
Cancel

▶ Activate the "Easy Setup" option button and click on "Next >".

▶ Follow the instructions of the wizard.

"Easy Setup" with or without frequency preset scan

You can allocate unused frequencies in various ways:


Frequenz-Manager
Scan-Modus auswählen
Wählen Sie "Preset-Scan", um die von SR-Geräten belegten Frequenzen zu ermitteln, oder "Weiter ohne Scan", wenn die Frequenzliste des Senders verwendet werden soll.
Scan-Daten
Preset-Scan mit portablem Empfänger (EK IEM)
Weiter ohne Scan
< Zurück
Weiter >
Abbrechen

- "Preset Scan with the help of EK300 device" – after a frequency preset scan:
  To find occupied as well as unused frequencies in the current vicinity of the system, perform a frequency preset scan.
- "Continue without Scan" – without a frequency preset scan:
  To allocate already known unused frequencies to stationary devices, specify these frequencies without a frequency preset scan.

You can then allocate these unused frequencies to the portable devices.

Performing a frequency preset scan for monitoring systems

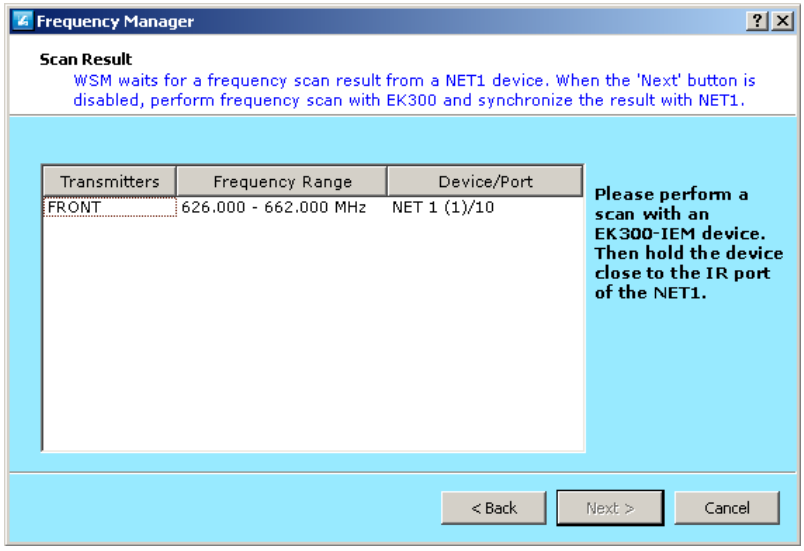
When operating both monitoring and microphone systems via the WSM, you first have to perform the frequency preset scan for the monitoring system.

The frequency preset scan is always performed for all frequencies in the selected channel bank.

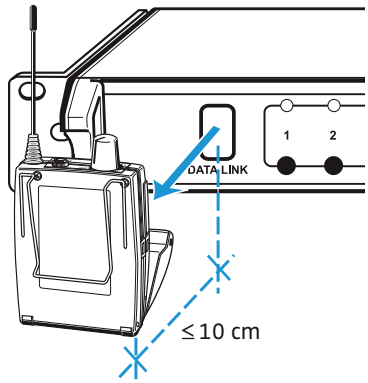
The stationary transmitters of the corresponding frequency range are automatically switched off during the frequency preset scan.

Performing a frequency preset scan using a portable receiver

- The frequency preset scan is performed using a portable receiver. You then transfer the scan results to the associated stationary transmitter or to the NET 1 (only necessary when using the EK 300 IEM G2). The WSM retrieves the data from the transmitter or the NET 1.


Frequency Manager
Scan Result
WSM waits for a frequency scan result from a NET1 device. When the 'Next' button is disabled, perform frequency scan with EK300 and synchronize the result with NET1.
Transmitters
Frequency Range
Device/Port
FRONT
626.000 - 662.000 MHz
NET 1 (1)/10
Please perform a scan with an EK300-IEM device. Then hold the device close to the IR port of the NET1.
< Back
Next >
Cancel

- Before starting the frequency preset scan, switch off all portable transmitters of your system. Otherwise, frequencies used by switched-on transmitters will not be displayed as ''unused''.
- Start the frequency preset scan on the receiver (see the instruction manual of the corresponding device).

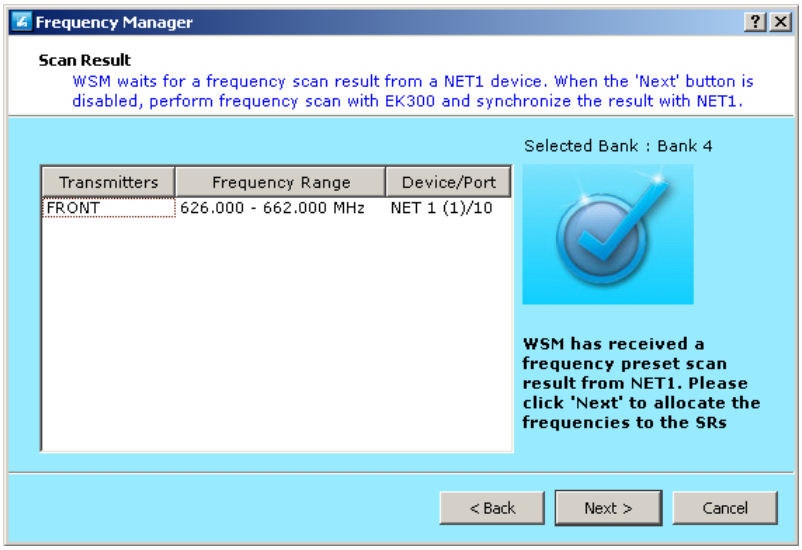


Transfering unused frequencies from the receiver to the NET 1

▶ When prompted by the wizard, place the receiver in front of the infrared interface of the NET 1. The distance between the infrared interface of the NET 1 and the infrared interface of the receiver must not exceed 10 cm.

Strong extraneous light may interfere with the transfer of the frequencies via the infrared interface. Therefore, position the receiver (IEM) so that any possible interference caused by extraneous light is avoided. The arrow in the diagram on the left indicates the direction from which the infrared radiation must impinge upon the receiver (IEM).

▶ The WSM continuously retrieves the scan results from the NET 1.

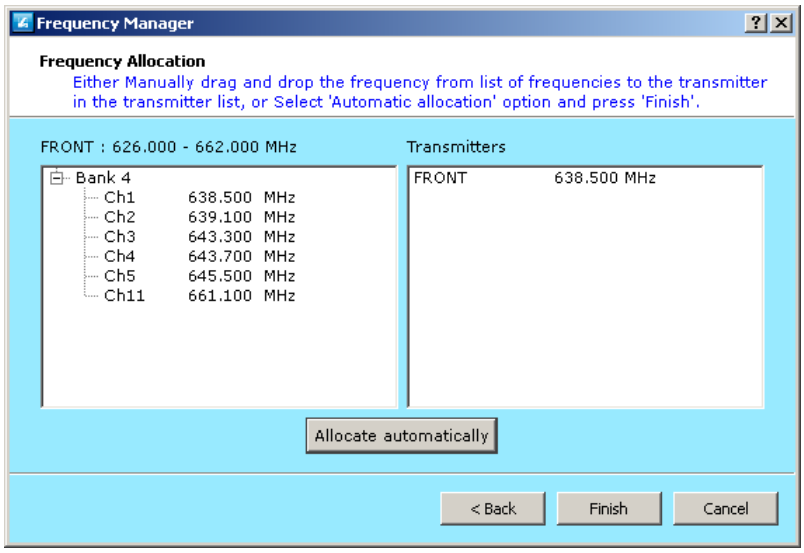

Frequency Manager
Scan Result
WSM waits for a frequency scan result from a NET1 device. When the 'Next' button is disabled, perform frequency scan with EK300 and synchronize the result with NET1.
Selected Bank : Bank 4
Transmitters
Frequency Range
Device/Port
FRONT
626.000 - 662.000 MHz
NET 1 (1)/10
WSM has received a frequency preset scan result from NET1. Please click 'Next' to allocate the frequencies to the SRs
< Back
Next >
Cancel

When all frequencies are successfully transfered, a tick appears in the WSM window and the "Next >" button becomes active.

When the transfer has failed (e.g. because the portable receiver operates in the wrong frequency range), repeat the procedure.

Allocating frequencies to stationary transmitters

You can allocate frequencies automatically or manually.



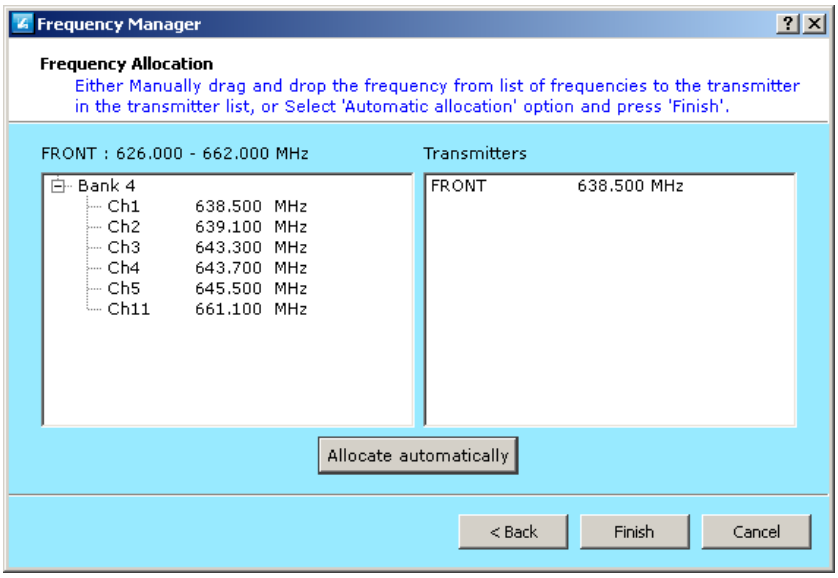
- Automatic allocation:
  If you have connected more transmitters (IEM) from one frequency range than free channels are available in one channel bank, the RF signals of the surplus transmitters (IEM) are muted.
- Manual allocation:
  If you assign the same frequency to several transmitters (IEM), only the first transmitter with this frequency is transmitting. The RF signals of the surplus transmitters are muted.

Allocating frequencies for a monitoring system without a frequency preset scan

When you allocate frequencies without a frequency preset scan, interference with transmitters in the vicinity of the system may result.

Allocating frequencies to stationary transmitters

You can allocate frequencies automatically or manually.



- Automatic allocation:
  If you have connected more transmitters (IEM) from one frequency range than free channels are available in one channel bank, the RF signals of the surplus transmitters (IEM) are muted.
- Manual allocation:
  If you assign the same frequency to several transmitters (IEM), only the first transmitter with this frequency is transmitting. The RF signals of the surplus transmitters are muted.

Performing a frequency preset scan for microphone systems

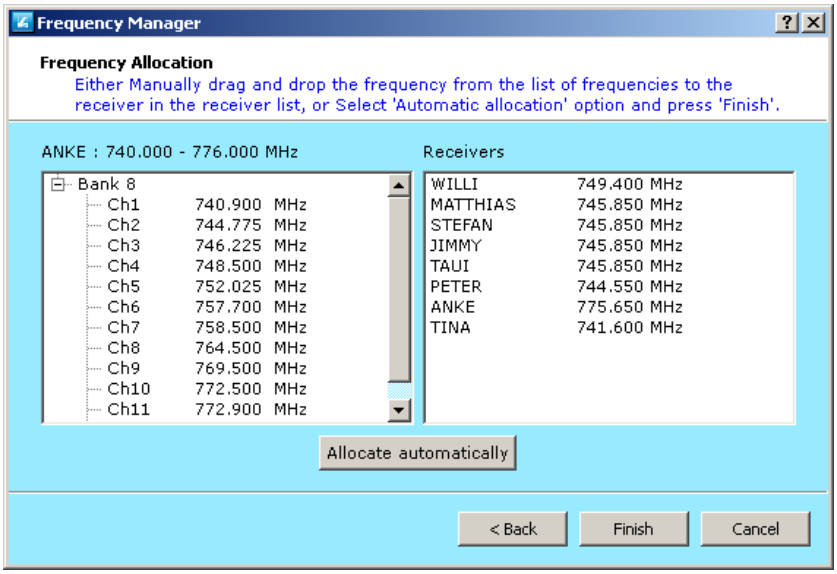
When operating both monitoring and microphone systems via the WSM, you first have to perform the frequency preset scan for the monitoring system.

The frequency preset scan is always performed for all frequencies in the selected channel bank.

For EM 3532 twin receivers, the frequencies are selected from tables that are supplied together with the WSM software. These tables are arranged in banks.

Allocating frequencies to stationary receivers

You can allocate frequencies automatically or manually.



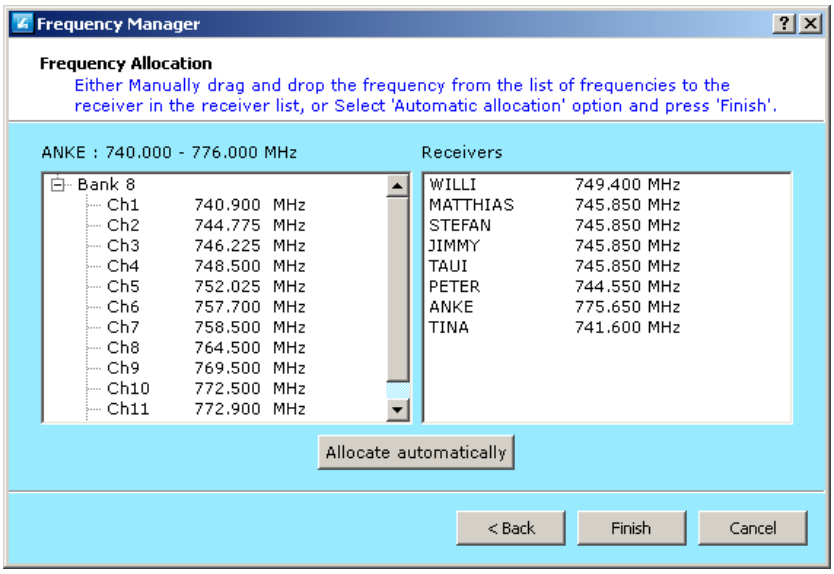
- Automatic allocation:
  If you have connected more receivers from one frequency range than free channels are available in one channel bank, the WSM re-assigns the last frequency assigned several times.
- Manual allocation:
  You can assign the same frequency to several receivers.

Allocating frequencies for a microphone system without a frequency preset scan

When you allocate frequencies without a frequency preset scan, interference with transmitters in the vicinity of the system may result.

Allocating frequencies to stationary receivers

You can allocate frequencies automatically or manually.



- Automatic allocation:
  If you have connected more receivers from one frequency range than free channels are available in one channel bank, the WSM re-assigns the last frequency assigned several times.
- Manual allocation:
  You can assign the same frequency to several receivers.

"Professional Setup" frequency management

"Professional Setup" allows you to perform a continuous frequency scan over a defined frequency range, independent of the presets of the devices. This allows you to detect interfering frequencies – so-called interferences – from external devices and to take them into account in the planning of the system.

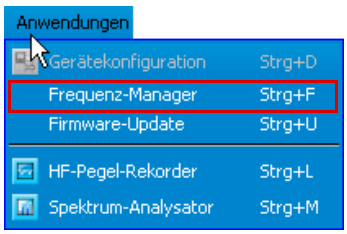
Using the "Professional Setup" frequency management, you can:

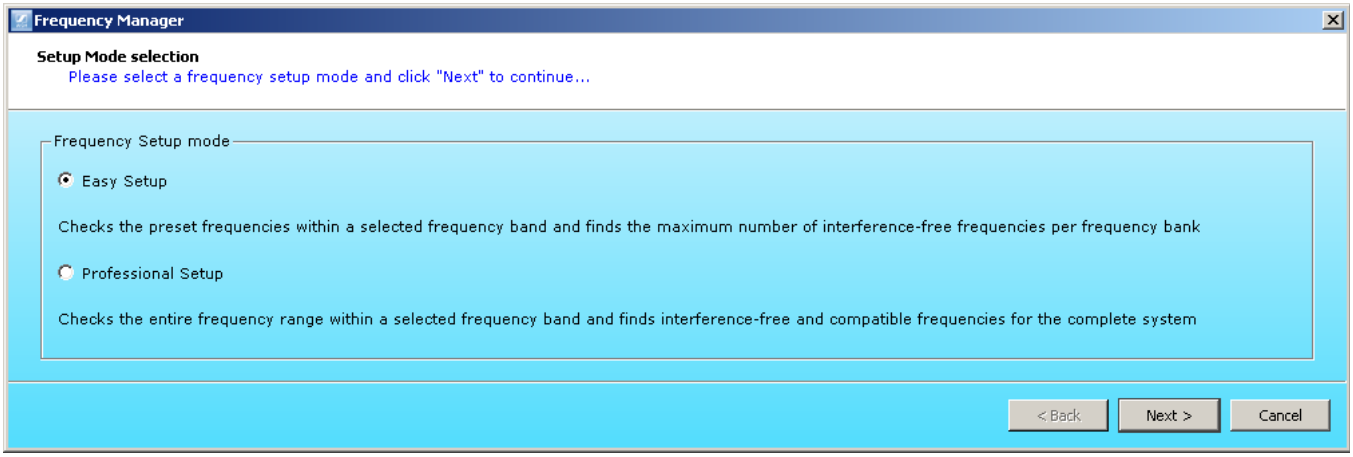
- create and store a new frequency setup or load and edit an existing frequency setup,
- use stationary receivers to scan a defined frequency range for signals (frequency scan) and in doing so detect occupied frequencies or interfering signals from external devices,
- manually enter the occupied frequencies of known devices and thus avoid these frequencies during frequency allocation,
- check the vicinity of your system for collisions of the frequencies including external devices; then calculate the intermodulation-free frequenices,
- allocate compatible frequencies to the devices,
- calculate spare frequencies in case interferences may occur during the production

Launching the "Professional Setup" frequency management

▶ Switch off all portable transmitters for which you want to find unused frequencies. The WSM automatically mutes the stationary transmitters.

▶ Click on "Applications" > "Frequency Manager".
The "Frequency Manager" window opens.




Frequency Manager
Setup Mode selection
Please select a frequency setup mode and click "Next" to continue...
Frequency Setup mode
Easy Setup
Checks the preset frequencies within a selected frequency band and finds the maximum number of interference-free frequencies per frequency bank
Professional Setup
Checks the entire frequency range within a selected frequency band and finds interference-free and compatible frequencies for the complete system
< Back
Next >
Cancel

▶ Activate the "Professional Setup" option button and click on "Next >".

▶ Follow the instructions of the wizard.

Tips and tricks on “Professional Setup”

Defining personal presets

If you have purchased licences for frequencies, it may be useful to define personal presets.

▶ Create a text file in which you write the desired frequencies (Value):

```
<!DOCTYPE WSM>
<WSM Version="1.0" >
  <FrequencyList Name="My list" >
    <Value>786.000</Value>
    <Value>786.400</Value>
    <Value>787.200</Value>
    <Value>788.800</Value>
    <Value>790.800</Value>
    <Value>833.300</Value>
    <Value>794.000</Value>
    <Value>566.000</Value>
    <Value>580.200</Value>
  </FrequencyList>
</WSM>
```

▶ Save the file with the extension WFL into the WSM program folder in this directory:
“...\Sennheiser\Wireless Systems Manager\IMData\Presets“

Setting the squelch threshold in the scan dialog – “Scan” window

▶ Click on the yellow dotted line and drag it upwards or downwards.
The set squelch treshold will be used for the scan and transfered to all connected devices.

With mixed systems, the available settings for the squelch threshold depend on the device with the least possibilities of squelch settings.

Setting the degree of reliability – "Configure frequencies" window

- "High safety":
  - Only few frequenices can be used but transmission reliability is at its maximum
  - Set the transmitter to max. 100 mW
  - Requirement for microphone systems:
    Minimum distance between transmitter and receiving antenna: 2 m
- "Regular":
  - More frequencies can be used but transmission reliability decreases with the number of frequencies increasing
  - Requirement for monitoring systems:
    The system comprises an antenna combiner (e.g. AC 3200)
  - Requirements for microphone systems::
    Set the transmitter to max. 50 mW; minimum distance between transmitter and receiving antenna: 5 m
- "Max. frequencies":
  - Many frequencies can be used but transmission reliability is low
  - Requirement for monitoring systems: The system comprises an antenna combiner (e.g. AC 3200) and operates in mono

Requirements for microphone systems:

- Set the transmitter to max. 10 mW (e.g. ew G3, 2000 series) or set "Low IM Mode" on the SKM 5212-II/SK 5200-II
- Minimum distance between transmitter and receiving antenna: 5 m

Calculating "spare frequencies" – "Compute frequencies" window

- Additionally calculated frequencies:
  - Fast access in case of interferences during running operation
  - Access via the "life belt" icon in the "Properties" window (see page 59)
- Number of spare frequencies definable before the scan:
  Increase the number of frequencies by 20% max. Otherwise, the calculation will take very long and less frequencies will be available due to the intermodulation products.

Adapting the list of possible interferers to the calculation – "Interferences list" window

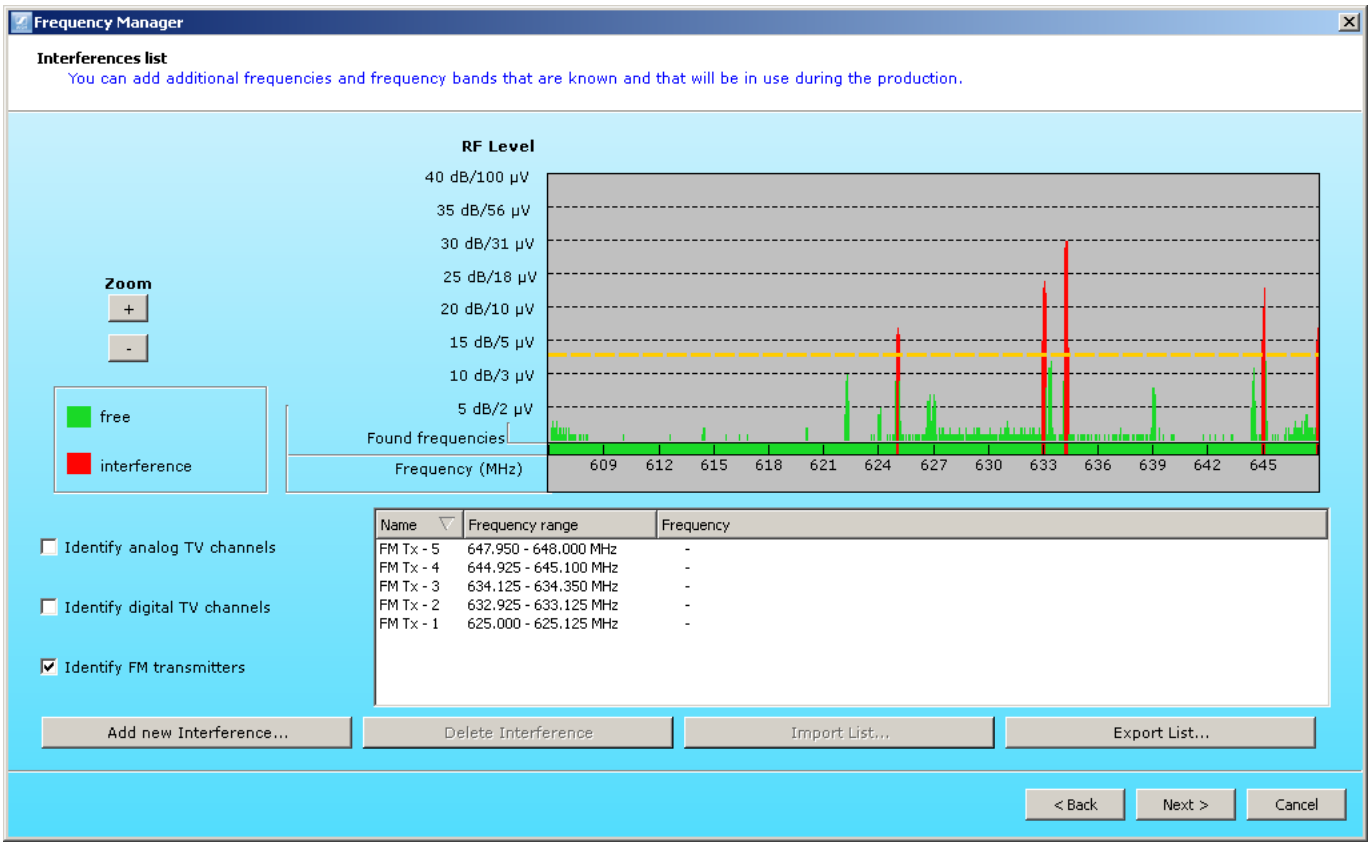
After the frequency scan, the "Interferences list" appears, showing all frequencies found. Occupied frequenices are displayed in red.

To take into account the frequencies of known interferers in your vicinity for the frequency calculation:

- Click on the area highlighted in gray and with the mouse button pressed mark out the frequency range to be taken into account.
  The marked frequency range appears in the list below the gray area.

In addition, you can use filters to group found, blocked frequencies into frequency ranges, thus allowing to accelerate the subsequent frequency calculation:

- Click on one or several check boxes to select the corresponding filters.
  A tick appears. The selected frequencies are grouped together.



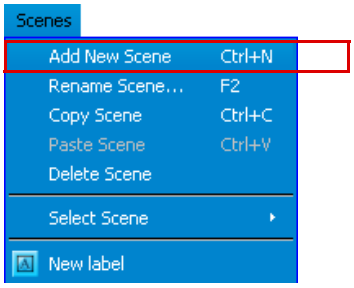
Working with scenes

The WSM allows you to define views, the so-called "scenes". In each scene, you can set up and move panels (see "Working with panels" on page 52). Thus, the scenes only display the transmission links relevant to you.

When you create a new configuration, there is first only the "Master Scene".
The "Master Scene" has the following particularities in comparison with other scenes:

- As soon as a new device is detected, it automatically appears as a panel in the "Master Scene". All other scenes are not affected.
  The "Master Scene" is an overview help. Therefore, do not use the "Master Scene" for configurations that you want to use repeatedly.
- You cannot delete or rename the "Master Scene".

Adding new scenes



▶ Click on "Scenes" > "Add New Scene".
The new scene is added. A new tab with the name "Scene 1" appears.

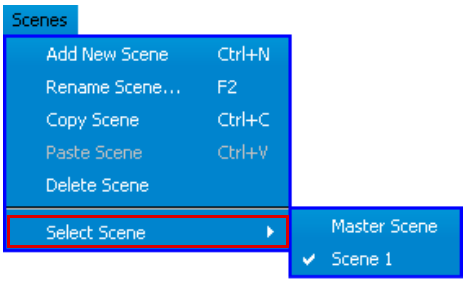
The display area of the scene is empty at first.

You can now drag panels in the new scene (see page 52) or use the scene for one of the tools (see page 62).

Selecting a scene

▶ Click on the tab of the desired scene.
The scene appears in the display area.

Or:



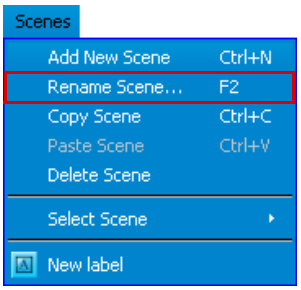
▶ Click on "Scenes" > "Select Scene".
The submenu containing the names of the scenes appears.

▶ Click on the desired scene.
The scene appears in the display area.

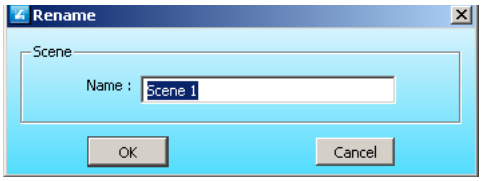
Renaming a scene

You cannot rename the "Master Scene".
To rename other scenes:

- Click on the tab of the scene you want to rename.



- Click on "Scenes" > "Rename Scene..." or press the "F2" key.
  The "Rename" window appears.

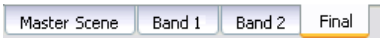


- Enter a new name for the scene.
- Click on "OK".
  The entered name appears on the tab.

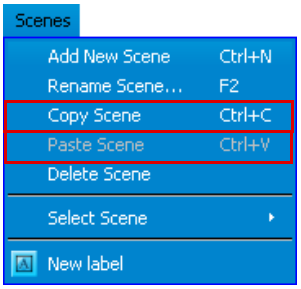
Copying and pasting scenes

You can copy the contents (panels or tools) of a scene and paste them into a new scene.

To copy the contents of a scene and paste them into another:



- Click on the tab of the scene you want to copy.

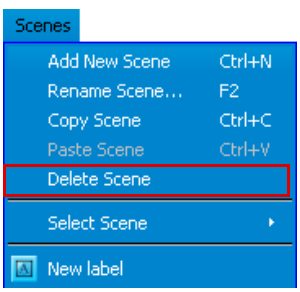


- Click on "Scenes" > "Copy Scene".
- Click on "Scenes" > "Paste Scene".
  The contents of the copied scene are pasted.

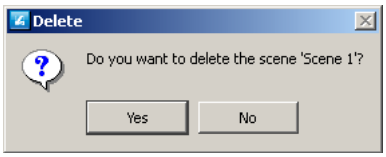
Deleting a scene

When deleting a scene, the configuration of the devices is retained.
You cannot delete the "Master Scene".

- Click on the tab of the scene you want to delete.



- Click on "Scenes" > "Delete Scene".
  The "Delete" window appears.

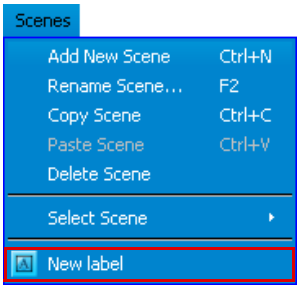


- Click on "Yes".
  The scene is deleted.

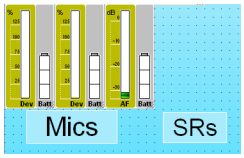
Scene commentary (label)

You can paste labels into a scene to provide a better overview. The labels can be freely dragged and re-sized.

Pasting labels



- In the "Scenes" menu, click on > "New Label".
  A label appears in the scene. The cursor blinks in the middle of the label.
- Enter your commentary.
  The font size is automatically adjusted to the size of the label.



To change the text at a later time:

- Right-click on the label.
  A submenu appears.
- Click on "Edit".
  The cursor appears in the text.
- Change the text in the label.

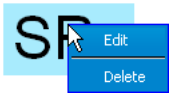
Dragging labels

- Click on the label.
  The move symbol appears.
- Move the label to the desired position.

Re-sizing labels

- Click on the edge of the label.
  Selection points appear at the edge of the label.
- Drag on one of the selection points to change the size of the label. Dragging one of the corner selection points changes both the height and width of the label.

Deleting labels



- Right-click on the label.
  A submenu appears.
- Click "Delete".
  The cursor appears in the text.
- Change the text in the label.
  The label is deleted.

Working with panels

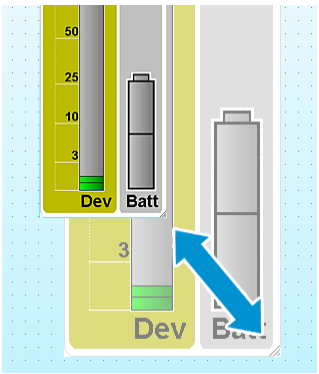
The WSM enables you to keep a clear overview of even large systems (see page 16). The scalable panels display the most important parameters of your transmission links.

Creating panels

To create a new panel:

- In the system window, click on the "Devices" tab.
- Click on a device and keep the mouse button pressed.
- Drag the device in the scene.
  A new panel appears in the scene.
  In the system window, an eye appears next to the device. The eye indicates that the corresponding device is displayed in the currently selected scene as a panel.

Enlarging/reducing panels



There is a dashed area in the lower right corner of the panel.

To steplessly reduce or enlarge the panels:

- Click on the dashed area.
- Keep the mouse button pressed and drag the panel to the left (= reduce) or to the right (= enlarge).

When you considerably zoom out a panel, the scales are hidden to provide a better overview.

Selecting several panels

When you select several panels, you can move, copy and cut them simultaneously, you can display the common parameters of the channels and you can edit these channel parameters (see page 59).

To select several panels:

- Click on a panel and keep the "Ctrl"/"Cmd" key pressed.
- Click on further panels in order to select them.
  The selected panels are highlighted in color.

  or

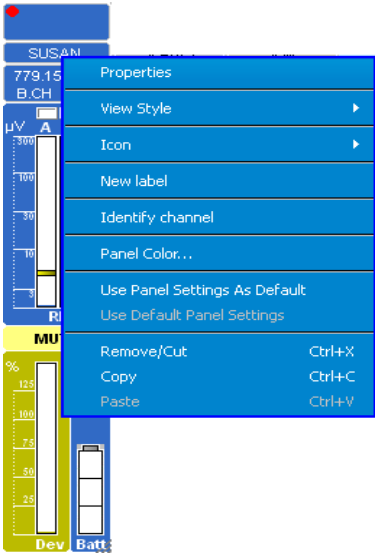
- Click on the background while keeping the left mouse button pressed.
- With the mouse pointer, draw a rectangle over the desired panels.
  The selected panels are highlighted in color.

Changing the graphical representation of panels

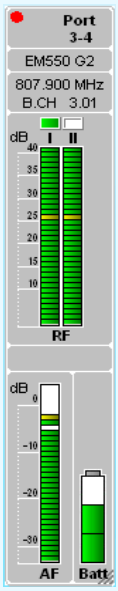
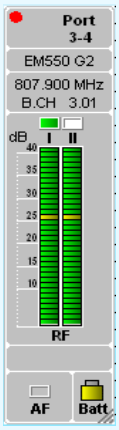
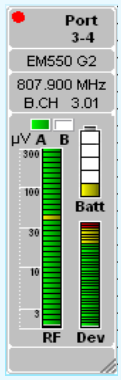
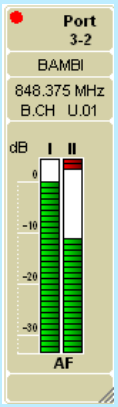
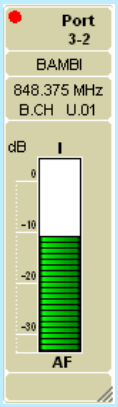
The WSM allows you to choose between different settings and graphical representations for the panels.

Changing the graphical representation of a panel

To change the graphical representation for a panel:



- Right-click on the panel.
  A shortcut menu appears.
- Click on "View Style".
  The submenu containing different panel styles appears.
- Select a panel style:

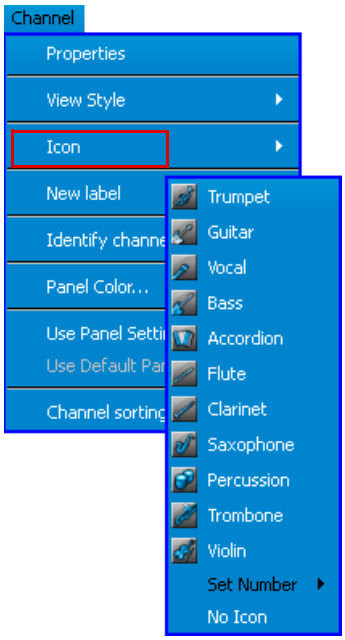
Panel styles for receivers			Panel styles for transmitters	
Variant 1	Variant 2	Variant 3	Mode: Stereo	Mode: Mono
				

- The panel style for a "transmitter" panel depends on the device settings.
- When you considerably zoom out a panel, the scales are hidden to provide a better overview.

Selecting an icon for a panel

To provide for a better overview, you can assign an icon corresponding to the instrument or a number to each panel. Alternatively, you can assign pictures – e.g. photos of the performers.

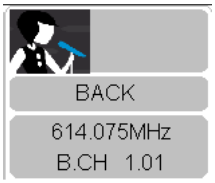
To select an icon for a panel:



- Click on the desired panel.
- Click on "Channel" > "Icon".
  A submenu appears.
- Select one of the icons.
  The icon appears in the upper left corner of the selected panel.

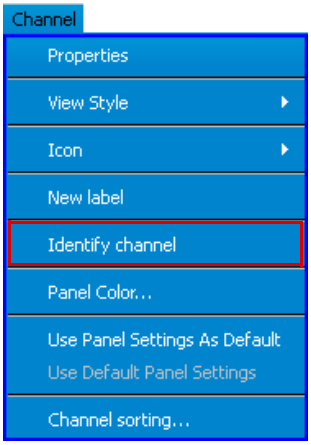
  or:
- Click on "Set Number" and select a number between 1 and 50.
  The number appears in the upper left corner of the selected panel.

  or:
- Click on "Icon".
  The "Open" window of your operating system appears.
- Select a graphic or a picture.
- Click on "Open".
  The picture appears in the upper left corner of the selected panel.



Changing the color of a panel

To assign a color to the border of the panel:

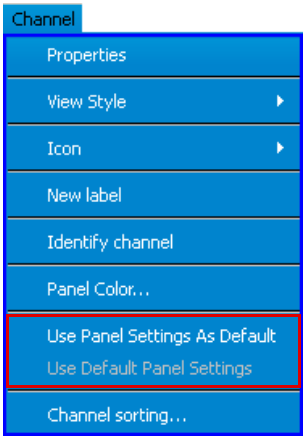


- Click on the desired panel.
- Click on "Channel" > "Panel Color".
  The "Panel Color" window appears.
- Select a color and click on "OK".
  The window closes. The border color of the panel is changed.

Defining standard panel settings and applying them

To define standard panel settings:

- Set up a panel as desired.
- Click on the panel.
- Click on ‘‘Channel’’ > ‘‘Use Panel Settings As Default’’.
  The settings such as panel style, size, icon and color of the selected panel are saved.



To apply the last saved standard panel settings to the panels:

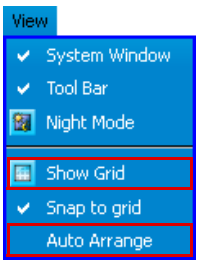
- Select one or several panels.
- Click on ‘‘Channel’’ > ‘‘Use Default Panel Settings’’.
  The settings such as panel style, size, icon and color are applied to the selected panels.

Aligning and moving panels

Moving panels

- Click on a panel or select several panels.
- Keep the left mouse button pressed and drag the panel(s) to the desired position.

Aligning panels to the grid



- Click on ‘‘View’’ > ‘‘Show Grid’’ to show the grid.
  The grid is shown.
- Click on the panel and keep the mouse button pressed.
- Drag the panel to the desired position in the scene.
  If the ‘‘Snap to grid’’ menu item is activated, the panel is automatically aligned to the grid.

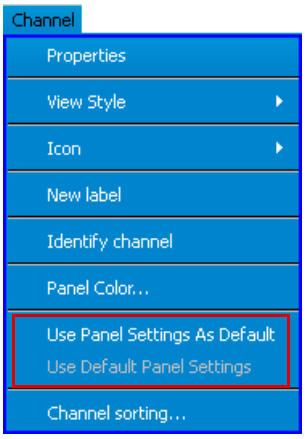
Arranging panels automatically

- Click on ‘‘View’’ > ‘‘Auto Arrange’’.
  A tick appears in front of the menu item. The panels are arranged side by side.

Adding a panel to a different scene

- Select one or several panels.

To copy or cut a panel:



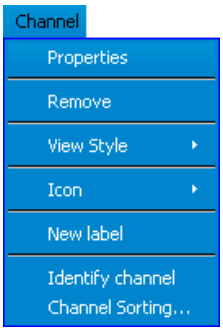
- Click on "Channel" > "Copy" or "Remove/Cut".
- Click on the tab of the desired scene.
  The scene appears on the display area.

- Click on "Channel" > "Paste".
  The panel appears in the selected scene.

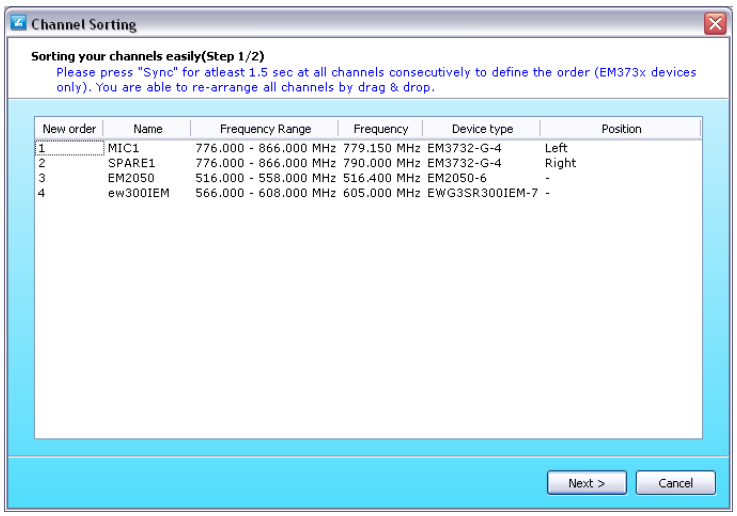
Sorting panels for multi-channel systems

The following function allows you to conveniently determine the sequence of the panels for devices of the ew G3 and 2000 series and EM 3732-II receivers.

To change the sequence of the panels:



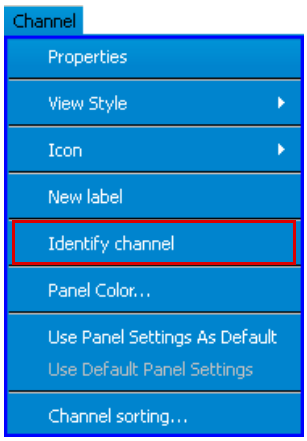
- Click on "Channel" > "Channel Sorting ....".
  The "Channel Sorting" window appears.


Channel Sorting
Sorting your channels easily(Step 1/2)
Please press "Sync" for atleast 1.5 sec at all channels consecutively to define the order (EM373x devices only). You are able to re-arrange all channels by drag & drop.
New order
Name
Frequency Range
Frequency
Device type
Position
1 MIC1 776.000 - 866.000 MHz 779.150 MHz EM3732-G-4 Left
2 SPARE1 776.000 - 866.000 MHz 790.000 MHz EM3732-G-4 Right
3 EM2050 516.000 - 558.000 MHz 516.400 MHz EM2050-6 -
4 ew300IEM 566.000 - 608.000 MHz 605.000 MHz EWG3SR300IEM-7 -
Next >
Cancel

- Follow the instructions of the wizard.

Identifying channels

The "Identify channels" function allows you to quickly identify connected devices of the ew G3 and 2000 series and EM 3732-II receivers.

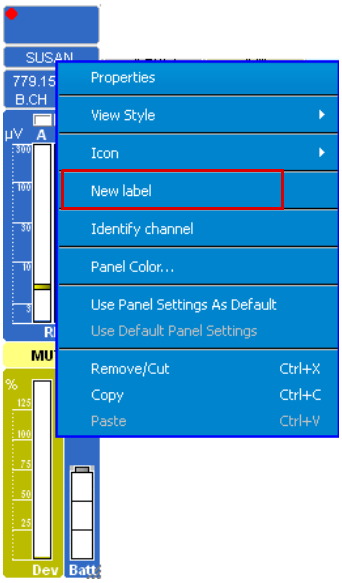


- Click on a panel.
- Click on "Channel" > "Identify Channel".
  "Identified" appears on the display of the selected device.

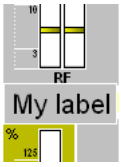
Panel commentary (label)

You can paste labels into the panels to provide a better overview. The labels can be freely dragged.

Pasting labels

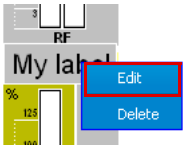


- Right-click on the panel.
  A shortcut menu appears.
- Click on "New Label".
  A label appears in the panel.



- Enter your commentary.
  The font size is automatically adjusted to the size of the label. You cannot re-size the label, as the label size is dependent on the panel size.

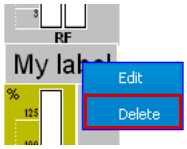
To change the text at a later time:



- Right-click on the label.
  A shortcut menu appears.
- Click on "Edit".
  The cursor appears in the label.

Dragging labels

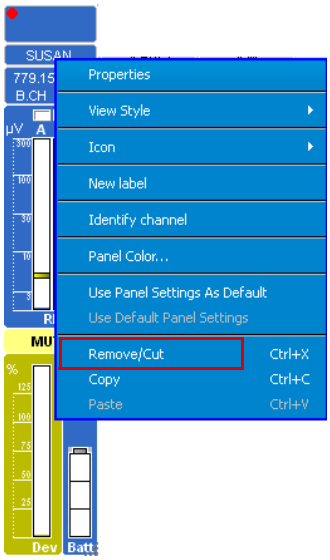
- Click on the label.
  The move symbol appears.
- Move the label to the desired position.



Deleting labels

- Right-click on the panel.
  A shortcut menu appears.
- Click on "Delete".
  The label is deleted.

Deleting panels



To remove unused panels from the display area:

- Right-click on the panel.
  A shortcut menu appears.
- Click on "Remove/Cut".
  The panel is deleted. The panel settings are lost. The set device parameters are retained. The eye in the system window is removed for this scene.

To restore all panels:

- Click on "System" > "Refresh Device List".
  All stationary devices appear as panels with the default panel settings in the display area. The previous panel settings are lost.

To restore individual panels:

- Read the chapter "Creating panels" on page 52.

Configuring devices

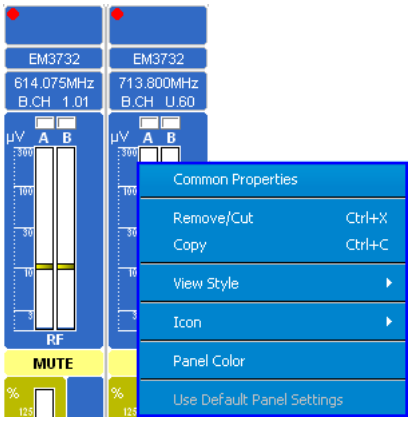
Setting parameters in the "Properties" window

You can configure stationary devices and the corresponding portable devices using the "Properties" window. To do so, select one or several panels (see page 52).

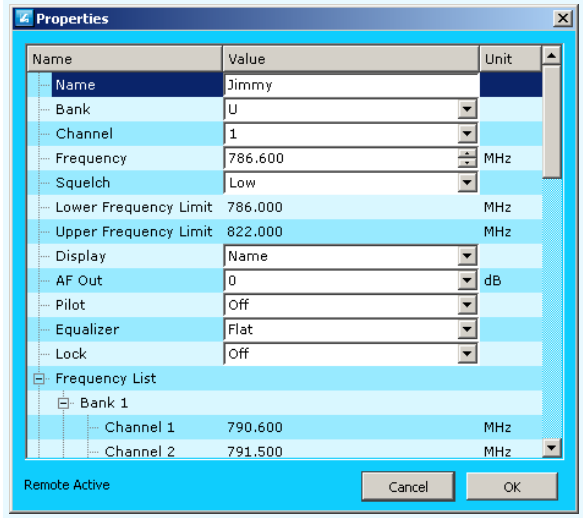
Displaying an overview of parameters

To display the parameters of the selected device:

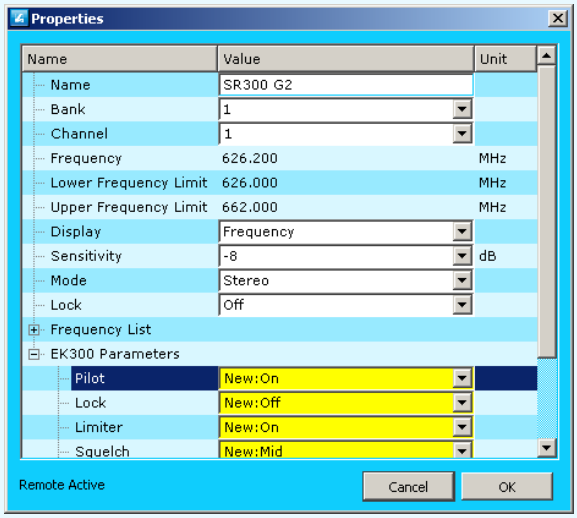
- Right-click on a panel.
  The shortcut menu appears.
- Click on "Properties" or "Common Properties".
  The "Properties" window opens.
  The parameters for the device appear in the left column ("Name"). To the right, the associated values ("Value") and units ("Units") are shown.



Dialog window of a wireless microphone system



Dialog window of a wireless monitoring system

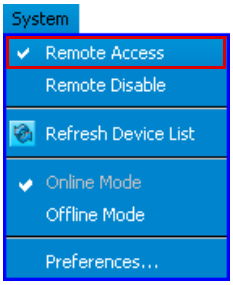


If you have selected several devices, only the identical, i.e common, parameters of the devices are displayed. All other fields contain no information.

The "life belt" icon is only visible if you have configured you system with "Professional Setup". This icon allows you access to the calculated spare frequencies (see page 45).

Changing the parameters of a device

Before you can change parameters, you must activate the ''Remote Access'' menu item:



▶ Click on ''System'' and check if the ''Remote Access'' command is ticked.

If ''Remote Access'' is not ticked:

▶ Click on ''Remote Access''.
You may be requested to enter a password (see page 10). A tick appears in front of the menu item. A red dot appears in the panel. When you call up the ''Properties'' window (see next section), ''Remote Active'' is displayed in the lower part of the window.

The parameters that you can change depend on the respective device type. Specific information on the parameters can be found in the instruction manuals for the devices.

Line highlighted in	Meaning
white	• You can change these parameters. • The data transfer to the devices was successful.
yellow	• The parameter has been changed but not yet transfered to the devices.

▶ Click on the arrow next to the corresponding parameter.
A selection list appears.

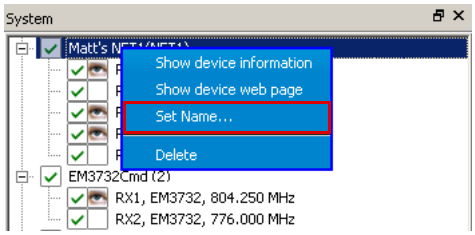
▶ Select the desired value.

▶ Click on ''OK''.
The window closes; the new parameters are transfered to the corresponding device.

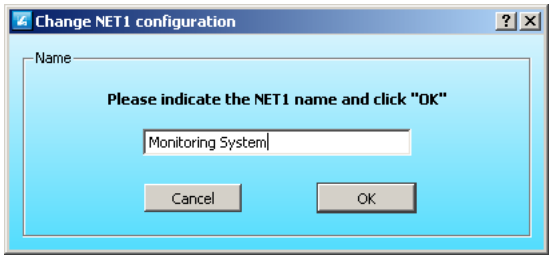
- The frequency of the device can only be changed when the channel bank ''U'' is selected.
- If you have selected several panels, you can simultaneously change the parameters of the selected devices.

Entering a name for NET 1

- In the system window, click on the ‘‘Devices’’ tab.
  If the system window is not shown, click on ‘‘View’’ > ‘‘System window’’.
- Right-click the desired NET 1.
  A shortcut menu appears.



- Click on ‘‘Set Name...’’.
  The ‘‘Change NET1 configuration’’ window opens.



If the entry ‘‘Set Name...’’ does not appear, you have to update the firmware of the device.

- Enter a name for the device and click on ‘‘OK’’.
  The dialog box closes. The name of the device is updated on the ‘‘Devices’’ tab.

Recording the field strength using the tools

The "RF Spectrum Analyzer" tool

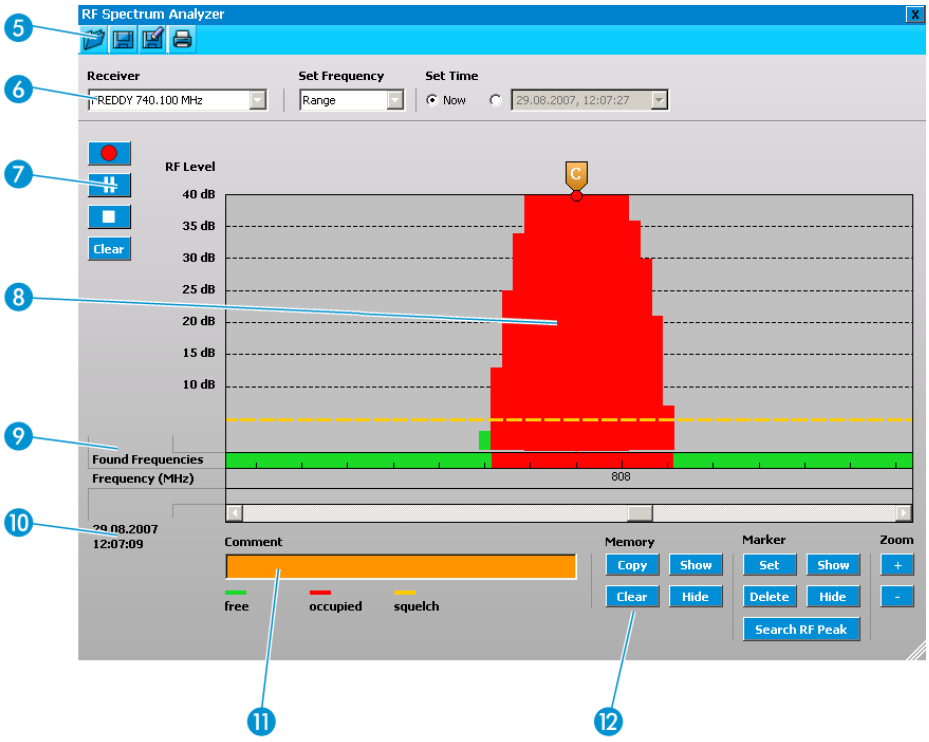
The "RF Spectrum Analyzer" tool allows you to get a clear picture of the frequency spectrum on location and provides you with all the necessary information for planning your wireless system – more up to date and reliable than any list.

- If you want to use the "RF Spectrum Analyzer" tool during live operation, select a receiver that is not required in the transmission.
- After you have completed the measurement with the "RF Spectrum Analyzer", you have to set the frequency of the receiver again.

Calling up the "RF Spectrum Analyzer"

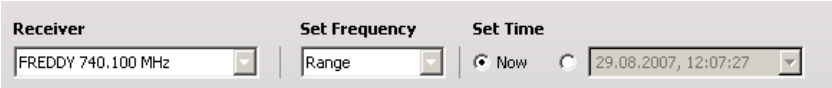
- In the system window, click on the "Tools" tab.
- Click on the "RF Spectrum Analyzer" icon.
- Keep the mouse button pressed and drag the icon in the scene.
  The "RF Spectrum Analyzer" window appears in the scene.

The "RF Spectrum Analyzer" window



5 Toolbar
6 Selection area
7 Recording bar
8 "RF Level" window (display range of up to 40 dB max.)
9 "Memory", "Found Frequencies" and "Frequency (MHz)" displays
10 Display of the current date and time
11 "Comment" field
12 Buttons of the "Memory", "Marker" and "Zoom" group

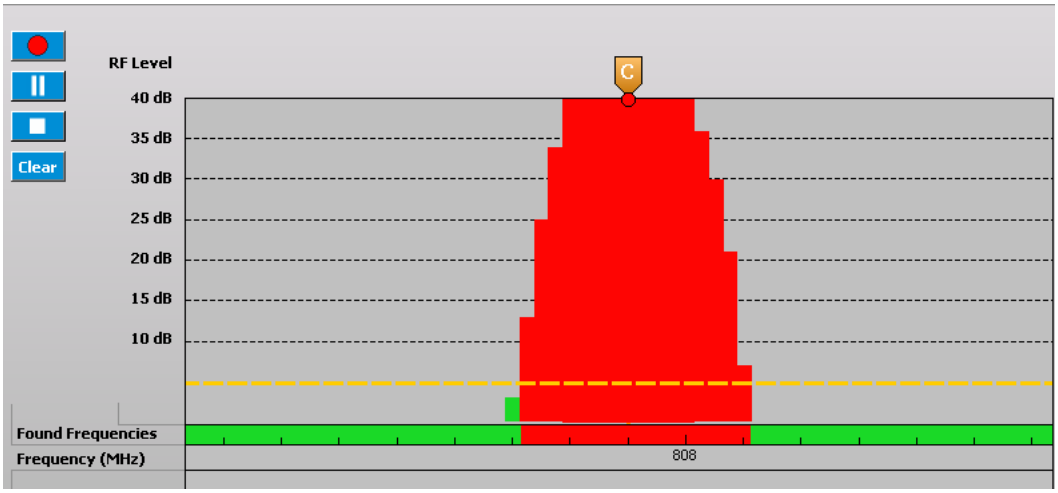
6 Selection area



In the selection area, you can:

- select a stationary receiver (see page 68),
- select the frequency range (see page 69) and
- preset the start time for the recording (see page 68).

8 "RF Level" window



This window displays the measured field strength of the different frequencies within the receiver's frequency range as vertical bars (display range of up to 40 dB).

The set squelch threshold is given as a reference. The squelch threshold is shown as a horizontal dotted line.

Color	Meaning
green	"free": The field strength is below the squelch threshold and is displayed as an unused frequency.
red	"occupied": The field strength is above the squelch threshold and is displayed as an occupied frequency.
yellow	"squelch": Squelch threshold

The squelch threshold can be adjusted in the "Parameter" window (see "Setting parameters in the "Properties" window" on page 59).

"Found Frequencies" display

The "Found Frequencies" displays the occupied frequencies detected during the recording as red squares.

"Frequency (MHz)" display

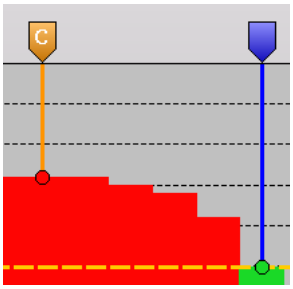
The frequencies are shown on the x-axis of the "Frequency (MHz)" line. The frequency range depends on the selected receiver and the setting made under "Set Frequencies".

"Memory" display

The "Memory" display is only shown if a recording from the temporary memory is displayed (see "Temporarily saving recordings and comparing them" on page 73).

Markers and comments

Important occurrences can be marked and commented. The markers are displayed as vertical blue lines. A blue flag appears above them.
When you click on a marker, the line and the flag turn to orange. When you move the mouse pointer over a marker, a box will appear above the marker, indicating the time and the measured field strength of both antennas.



When you have clicked on a marker, you can enter a comment in the "Comment" field. A "C" appears in the flag of the marker. The comment is displayed again when you click on the marker (see "Marking measured values and commenting on them" on page 74).

Display of the current date and time

The current date and time are displayed. Date and time are taken from the operating system.

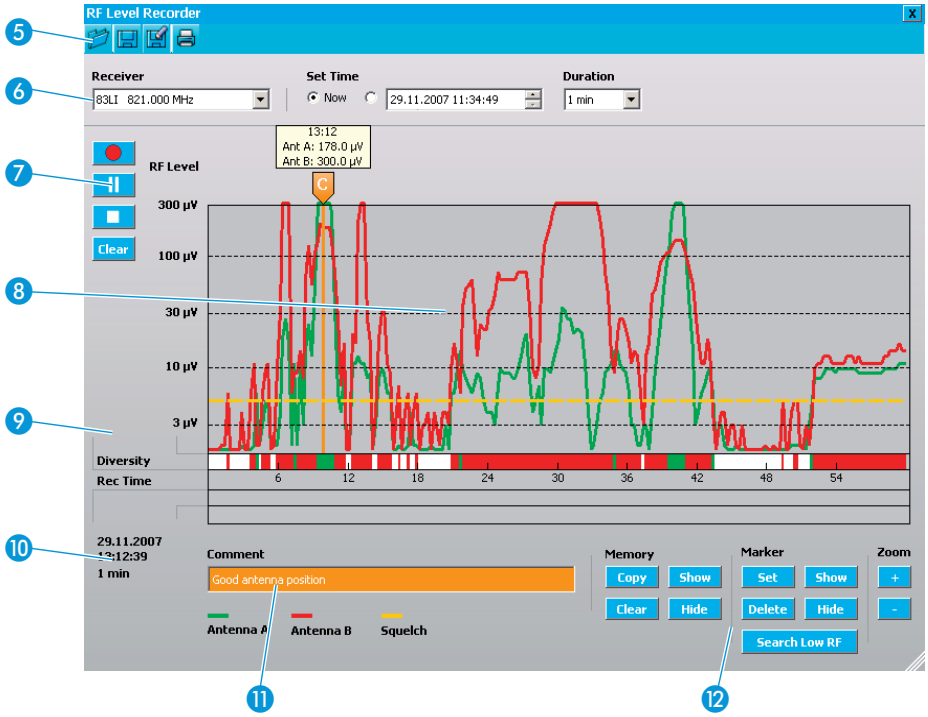
The “RF Level Recorder” tool

The “RF Level Recorder” tool allows you to check the reception quality of your wireless microphone system. You can record the field strength of any transmitter in any area of the stage and, if necessary, optimize the antenna positions using the detailed graphical representation provided by the tool.

Calling up the “RF Level Recorder”

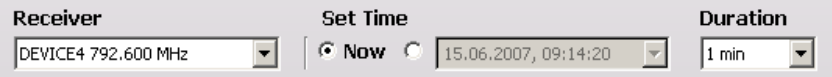
- In the system window, click on the “Tools” tab.
- Click on the “RF Level Recorder” icon.
- Keep the mouse button pressed and drag the icon in the scene.
  The “RF Level Recorder” window appears in the scene.

The “RF Level Recorder” window



5 Toolbar
6 Selection area
7 Recording bar
8 “RF Level” window (display range of up to 40 dB max.)
9 “Memory”, “Diversity” and “Rec Time” displays
10 Display of the current date and time and the set recording duration
11 “Comment” field
12 Buttons of the “Memory”, “Marker” and “Zoom” group

❻ Selection area

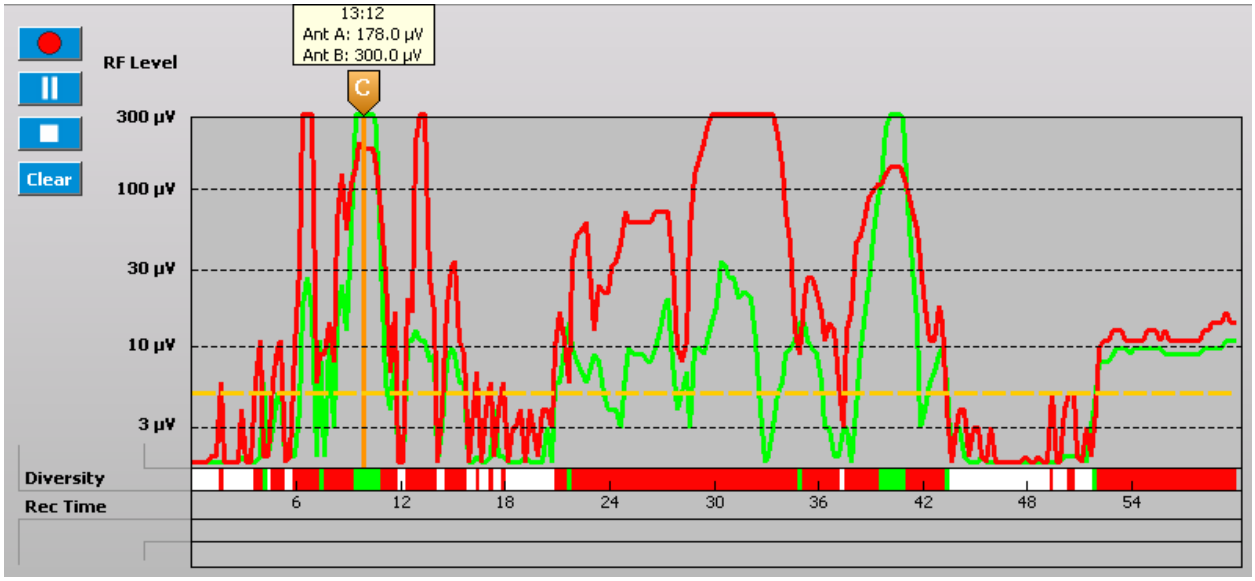


In the selection area, you can:

- select a stationary receiver (see page 68),
- preset the start time for the recording (see page 68) and
- set the recording duration (see page 68).

❽ "RF Level" window

This window displays the field strength of the receiver's diversity channels over a defined period of time.



The measured values of the field strength "RF Level" are displayed as colored bars over the defined measuring duration. Field strength levels of up to 40 dB max. can be displayed.

Color	Meaning
red	Diversity channel: • "Antenna I" – ew G3/G2 and 2000 series receivers or • "Antenna A" – EM 3532, EM 373X receiver
green	Diversity channel: • "Antenna II" – ew G3/G2 and 2000 series receivers or • "Antenna B" – EM 3532, EM 373X receiver
yellow	Squelch threshold

"Memory" display

The "Memory" display is only shown if a recording from the temporary memory is displayed (see "Temporarily saving recordings and comparing them" on page 73).

"Rec Time" display

The measuring duration is shown together with the current time on the x-axis of the "Rec Time" line. The measuring duration depends on the setting made under "Duration" (see "Setting the recording duration – "RF Level Recorder" only" on page 68).

"Diversity" display

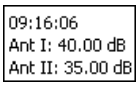
The colored bars in the "Diversity" line display the active diversity section.

Color	Meaning
red	The measured field strength of "Antenna I" / "Antenna A" is higher than that of "Antenna II" / "Antenna B"
green	The measured field strength of "Antenna II" / "Antenna B" is higher than that of "Antenna I" / "Antenna A"
white	The measured field strength of both antennas is below the squelch threshold; the receiver is muted

Example:
At 15:00 o'clock, the bar is green, i.e. antenna I/A is active. At 16:00 o'clock, the field strength of antenna II/B is stronger. Antenna II/B becomes active and the bar in the "Diversity" line is displayed in red.

Markers and comments

Important occurrences can be marked and commented. The markers are displayed as vertical blue lines. A blue flag appears above them.
When you click on a marker, the line and the flag turn to orange. When you move the mouse pointer over a marker, a box will appear above the marker, indicating the time and the measured field strength of both antennas.



When you have clicked on a marker, you can enter a comment in the "Comment" field. A "C" appears in the flag of the marker. The comment is displayed again when you click on the marker (see "Marking measured values and commenting on them" on page 74).

Display of the current date and time and the recording duration

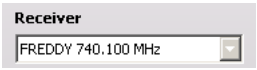
The current time, the date and the recording duration are displayed. Time and date are taken from the operating system. The recording duration is set under "Duration" (see "Setting the recording duration – "RF Level Recorder" only" on page 68).

Working with the tools

Selecting a stationary receiver for the recording

You can do the recording with any stationary receiver.

To select a stationary receiver:



- Click on the arrow in the "Receiver" field.
  A list of the connected receivers with their respective frequency ranges appears.
- Select the desired receiver by clicking on it.

Presetting the start time for the recording

You can either start the recording immediately, or you can preset a start time.

To preset a start time for the recording:

- Click on the arrow in the "Set Time" field.
  A window that contains a calendar and the current time appears.
- Click on the arrows to the left and right of the month to change the month and the year.
- Click on the day to select the date to be entered into the date field.
- Enter the time directly in the "Time:" field.
- Make sure that all relevant devices for the recording are switched on at that time and that the WSM is running.

If you want to use the "Spectrum Analyzer" tool during live operation, select a receiver that is not required in the transmission.

Setting the recording duration – "RF Level Recorder" only

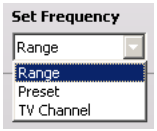
You can select a recording duration from 1 minute to 24 hours.

To set the recording duration:

- Click on the arrow in the "Duration" field.
  A selection list appears.

- Select the recording duration from the list.
  The selected value appears in the "Duration" field.

Setting the frequencies – "RF Spectrum Analyzer" only

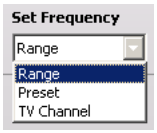


To manually set the frequency range to be recorded:

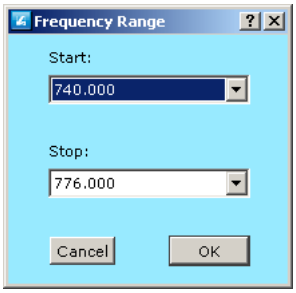
- Click on the arrow in the "Set Frequency" field.
  A selection list appears.
- Select one of the following menu items:
  - "Range" – to set the upper and lower limit of a frequency range (see page 69)
  - "Preset" – to select the channel bank of a receiver (see page 69)
  - "TV Channel" – to select the TV channels (frequencies) to be taken into account during the recording (see page 70)

Setting the upper and lower limit of the frequency range (Range)

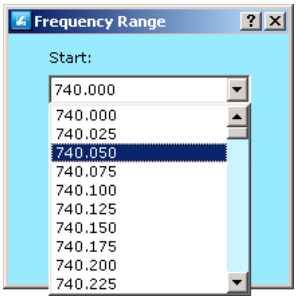
You can set the upper and lower limit of the frequency range to be recorded. Both frequencies must be within the frequency range of the receiver.



- Click on "Range".
  The "Frequency Range" window appears.



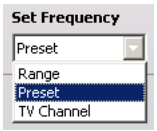
- Click on the arrow in the "Start" field.
  A list of frequencies from the frequency range appears.



- Select the lower limit.
- Click on the arrow in the "Stop" field to select the upper limit.
- Click on "OK".
  The dialog box closes. The "Frequency (MHz)" display (x-axis) is scaled to the selected frequency range. Only the selected frequency range is recorded.

Selecting a channel bank of a receiver (Preset)

You can select a channel bank of a receiver in order to only record the frequency range of this channel bank.



- Click on "Preset".
  The "Preset" window appears.

ew G2 receivers

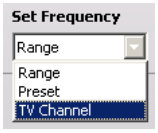
EM 3532 twin receiver

EM 373X receivers

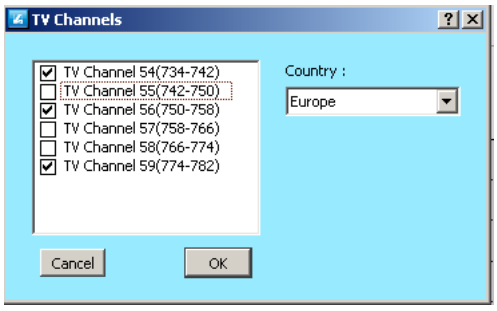
▶ Select a channel bank (e.g. "Bank 1") by clicking on it.
The "Frequency (MHz)" display (x-axis) is scaled to the frequency range of the selected channel bank.
Only the frequencies in the selected channel bank are recorded.

Selecting TV frequencies (TV Channel)

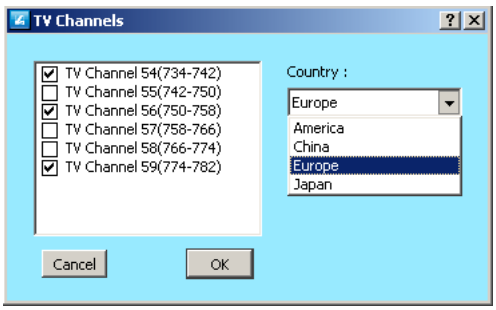
You can select TV frequencies from within the device's frequency range to be taken into account during the recording.



▶ Click on "TV Channel".
The "TV Channels" window appears.



▶ Click on "Country" and select an entry.



▶ Click the desired check box to select the TV frequencies to be recorded.
A tick appears.

▶ Click on "OK".
The dialog box closes. The selected TV frequencies are taken into account during the recording.

Overview of the buttons of the tools

Buttons in the toolbar	Function of the button
	Opens a saved recording.
	Saves the current recording under the same name.
	Saves the current recording under a new name.
	Prints the contents of the "RF Level" window of the current recording (up to 40 dB max.).

Buttons in the recording bar	Function of the button
	Starts a recording.
	Cancels the recording.
	Interrupts the recording.
	Deletes the last recording.

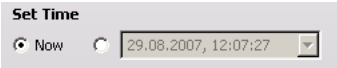
Buttons in the "Memory" group	Function of the button
	Copies the current recording to the temporary memory.
	Deletes the recording from the temporary memory.
	Displays the recording from the temporary memory.
	Hides the recording from the temporary memory.

Buttons in the "Marker" group	Function of the button
	Places a marker on a measuring value in the "RF Level" window.
	Deletes a marker from the "RF Level" window.
	Shows all markers.
	Hides all markers.
	Searches and jumps to the measured peak values.
	Searches and jumps to values below the squelch threshold.

Starting the field strength recording

After you have set the recording duration, you can start the field strength recording.

To start the recording:



▶ Click on "Now" option button under "Set Time".

▶ Click on "Start".

If you have not yet saved the last recording, you will be asked if you want to save it (see "Saving recording data" on page 75).

Interrupting the field strength recording

To interrupt the recording:

▶ Click on "Pause".
The field strength levels are not recorded during this time. Only the "Squelch" bar continues to move. The recording duration is not changed by an interruption.

To continue the recording:

▶ Click on "Start".
The field strength recording is continued.

Canceling the field strength recording

To cancel the recording:

▶ Click on "Stop".

To start a new recording and to overwrite the cancelled recording:

▶ Click on "Start".

Deleting the last field strength recording

To delete the last recording:

▶ Click on "Clear".
The recording is deleted form the memory and from the "RF Level" window.

Zooming the "RF Level" window in/out

The "Zoom" function allows you to zoom the "RF Level" window in and out. A zoomed-out window provides a better overview, a zoomed-in window shows details.

To zoom the "RF window" in:

▶ Click on the "+" button.
The "RF window" is zoomed in. The scroll bar is automatically adjusted.

To zoom the "RF window" out:

▶ Click on the "-" button.
The "RF window" is zoomed out. The scroll bar is automatically adjusted.

Temporarily saving recordings and comparing them

The "Memory" function allows you to temporarily save recordings. The measured values (bars) of the previous recording are displayed lighter. The superimposed measured values of the current recording a displayed darker. This allows you to compare two recordings.

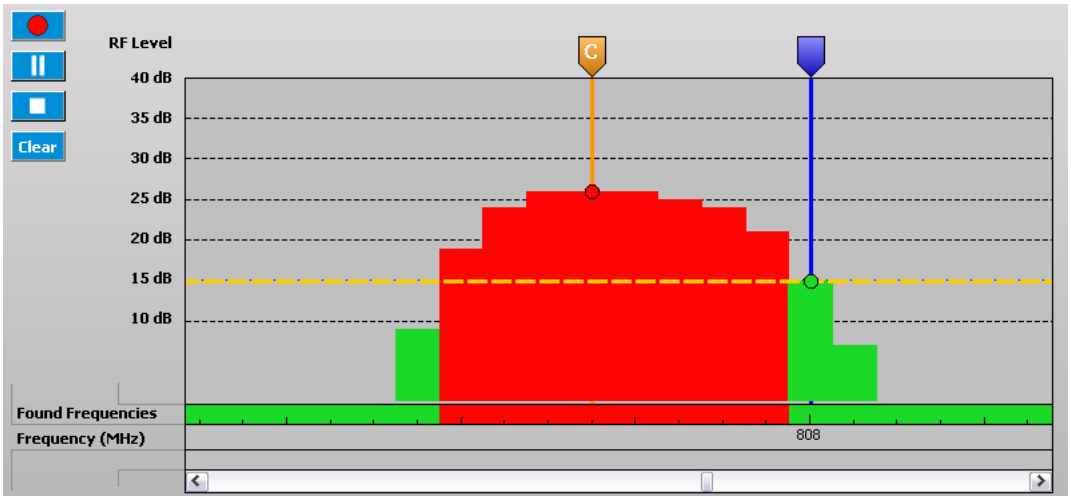
Temporarily saving a recording

▶ Click on "Copy".
The measured values are copied to the temporary memory. The comments and markers are not taken over.

After you have made another recording, you can show the previous recording by clicking on "Show" and directly compare the two recordings.

Showing the recording from the temporary memory

▶ Click on "Show".
The "Memory" line appears. The "Memory" line shows the colored bars displaying the respective active diversity section as shown before in the "Diversity" line.
The "RF Level" window displays the measured values (bars) of the recording from the temporary memory. These bars are displayed lighter while the superimposed bars of the current recording a displayed darker.



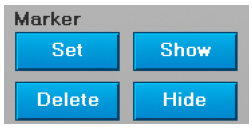
Hiding the recording from the temporary memory

▶ Click on "Hide".
The measured values (bars) of the recording from the temporary memory are hidden but are retained in memory.

Deleting the recording from the temporary memory

▶ Click on "Clear".
The measured values (bars) of the recording from the temporary memory disappear from the "RF Level" window and are deleted from the temporary memory.

Marking measured values and commenting on them



In order to be able to better evaluate the measured values of a recording, you can use the "Marker" function. This allows you to mark the measured values and provide them with a comment.

To mark a measured value and comment on it:

- Click on "Set".
  The mouse pointer changes to a cross.
- Move the cross to the measured value you want to mark.
- Place a marker by clicking on the measured value.
  The marker is displayed as a blue line with a blue flag.
- Enter your comment into the "Comment" field.
  Subsequently, a "C" appears in the flag.

To delete a marker:

- Click on the marker.
- Click on "Delete".
  The marker and the corresponding comment are deleted.

To hide all markers:

- Click on "Hide".
  The markers are hidden.

To show all markers:

- Click on "Show".
  The markers are shown.

To show a comment on a marker:

- Click on the marker.
  The color of the marker changes to orange. The comment is shown in the "Comment" field. You can change or add to your comment by clicking in the "Comment" field and entering your changes.

Finding minimum and maximum values

Searching for the minimum field strength – "RF Level Recorder" only

The "RF Level Recorder" allows you to search for measured field strength values which are below the squelch threshold. The search always refers to the measured values of both antennas.

- Click on "Search Low RF".
  The lowest measured field strength value that is below the squelch threshold is displayed. A marker appears at this point.
- Reclick on "Search Low RF" to search for the next higher measured value.

Searching for the maximum field strength – "RF Spectrum Analyzer" only

The "RF Spectrum Analyzer" allows you to search for field strength peaks.

- Click on "Search RF Peak".
  The highest measured field strength value is displayed. A marker appears at this point.
- Reclick on "Search RF Peak" to search for the next lower measured value.

Saving recording data

You can save the data of a recording as a CSV file. You can open and edit this file with any spread sheet program. Make a copy of the CSV file before editing it.

To save a file:

- Click on "Save".
  The data is saved.

When the recording has not yet been saved, the "Save As..." window appears automatically.

To save a file under a new name:

- Click on "Save as".
  The "Save As..." window appears. The WSM proposes the "Data" folder in the program folder.
- If necessary, select a different folder in which to save the file.
- Enter a file name.
- Click on "Save".
  The measured values, markers and comments are saved. The dialog box closes.

Loading previously saved recording data

To load a previously saved recording (CSV file):

- Click on "Open".
  The "Open" window appears.
- Select the desired file.
- Click on "OK".
  The saved recording is loaded and appears in the "RF Level" window.

Printing recording data

To print the current "RF Spectrum Analyzer" window:

- Click on "Print".
  The "Print" window appears.
- Configure your printer and click on "Print".
  The current "RF Spectrum Analyzer" window is printed.

If a problem occurs

If a problem occurs that cannot be solved with the proposed solutions:

- Register on the Sennheiser homepage at `www.sennheiser.com` and describe the problem in the "Support" section

or

- contact your local Sennheiser partner.

Hardware

▶ First check the connections and cables of the devices.

▶ Check if all devices are switched on.

Software

The firmware update has failed (displays of the devices remain dark)

Stationary devices of the ew G2 series

▶ Start the updating process as described in the section "Updating the firmware in the devices" on page 36.

▶ Disconnect the device from the mains by pulling out the mains plug (the device remains connected to the NET 1 via the RJ 10 cable).

▶ Keep the "ON/OFF" button pressed.

▶ Reconnect the mains plug.
The WSM displays a status bar. The firmware is updated.

▶ Release the "ON/OFF" button.

Portable devices of the series and SKP 3000

▶ Start the updating process as described in the section "Updating the firmware of the devices" on page 32.

▶ Keep the "ESC" button (portable receivers) or the "ON/OFF" button (portable transmitters) pressed.

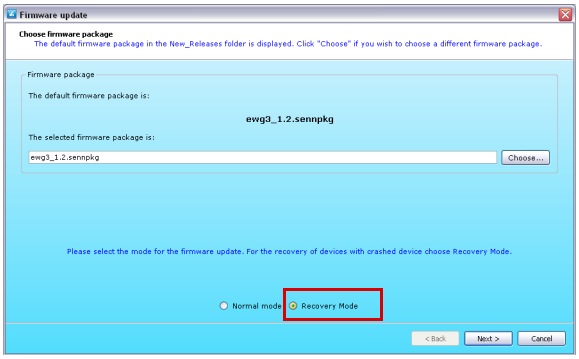
▶ Briefly interrupt the power supply by pushing the batteries/accupack against the contact spring in the battery compartment.

▶ Place the device again in front of the infrared interface.
The WSM displays a status bar. The firmware is updated.

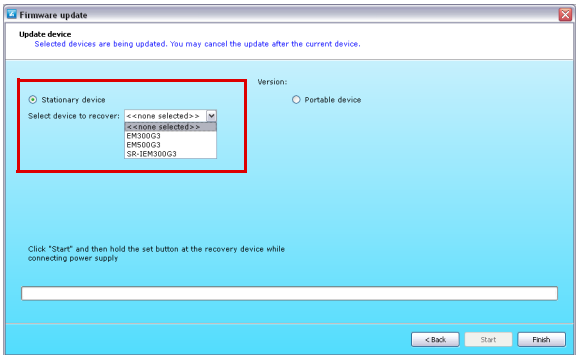
▶ Release the "ESC" button (portable receivers) or the "ON/OFF" button (portable transmitters).

Stationary devices of the ew G3 and 2000 series

- Start the updating process as described in the section "Updating the firmware of the devices" on page 32.
- Select "Recovery Mode" in the resulting window and click on "Next >".


Firmware update
Choose firmware package
The default firmware package in the New_Releases folder is displayed. Click "Choose" if you wish to choose a different firmware package.
Firmware package
The default firmware package is:
ewg3_1.2.sennpkg
The selected firmware package is:
ewg3_1.2.sennpkg
Choose...
Please select the mode for the firmware update. For the recovery of devices with crashed device choose Recovery Mode.
Normal mode
Recovery Mode
< Back
Next >
Cancel

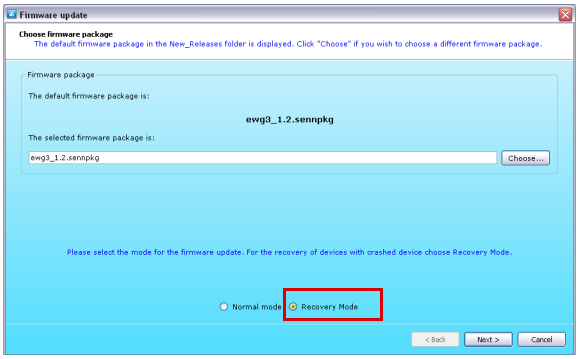
- Select the "Stationary device" option.
- From the selection field, select the device type.



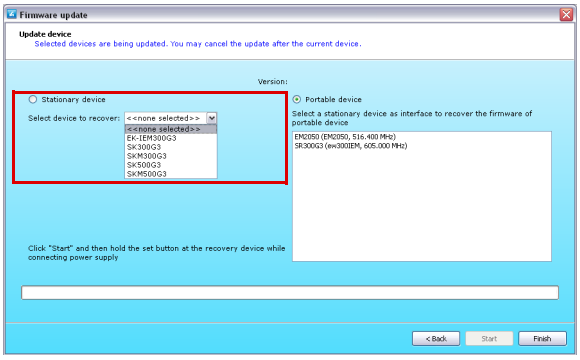
- Click on "Start".
- Disconnect the device in question from the mains.
- Keep the "SET" button pressed.
- Reconnect the mains plug.
  The WSM displays a status bar. The firmware is updated.
- Release the "SET" button.

Portable devices of the ew G3 and 2000 series

- Start the updating process as described in the section "Updating the firmware of the devices" on page 32.
- Select "Recovery Mode" in the resulting window and click on "Next >".

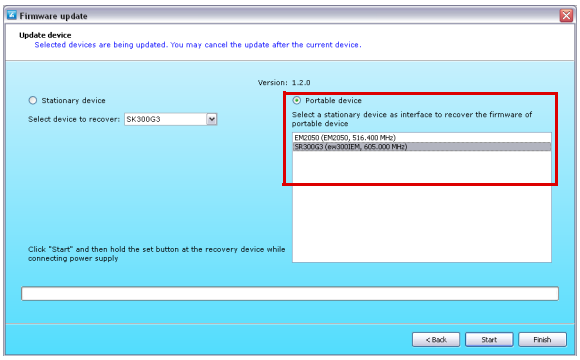

Firmware update
Choose firmware package
The default firmware package in the New_Releases folder is displayed. Click "Choose" if you wish to choose a different firmware package.
Firmware package
The default firmware package is:
ewg3_1.2.sennpkg
The selected firmware package is:
ewg3_1.2.sennpkg
Choose...
Please select the mode for the firmware update. For the recovery of devices with crashed device choose Recovery Mode.
Normal mode
Recovery Mode
< Back
Next >
Cancel

▶ Select the "Portable device" option.



▶ From the selection field, select a stationary device.

▶ In the right hand list, click on the affected portable device.
"Sync" appears on the display of the selected device.


Firmware update
Update device
Selected devices are being updated. You may cancel the update after the current device.
Version: 1.2.0
Stationary device
Select device to recover: SK300G3
Portable device
Select a stationary device as interface to recover the firmware of portable device
EM2050 (EM2050, 516.400 MHz)
SR300G3 (ew300IEM, 605.000 MHz)
Click "Start" and then hold the set button at the recovery device while connecting power supply
< Back
Start
Finish

▶ Click on "Start".

▶ Keep the "SET" button pressed.

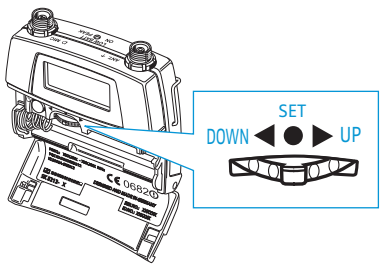
▶ Briefly interrupt the power supply by pushing the batteries/accupack against the contact spring in the battery compartment.

▶ Place the device in question in front of the stationary device with the "Sync" display.
The WSM displays a status bar. The firmware is updated.

▶ Release the "SET" button.

SK 5212

Start the updating process as described in the section "Updating the firmware of the devices" on page 32.



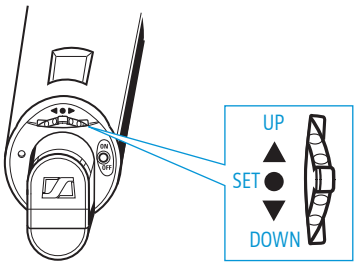
▶ Remove the battery.

▶ Slide the multi-function switch to the right (UP ▶) and keep it in this position.

▶ Reinsert the battery.

▶ Place the device again in front of the infrared interface.
The WSM displays a status bar. The firmware is updated.

▶ Release the multi-function switch.



SKM 5200

Start the updating process as described in the section "Updating the firmware of the devices" on page 32.

- Remove the power pack.
- Slide the multi-function switch upwards (UP ▲) and keep it in this position.
- Reinsert the power pack.
- Place the device again in front of the infrared interface.
  The WSM displays a status bar. The firmware is updated.
- Release the multi-function switch.

The program does not launch

- Check that your PC satisfies the system requirements (see "System requirements" on page 5).
- Check the settings of your firewall; the WSM may be blocked by a setting.

The receiver panel does not appear

The firmware in the receiver has not yet been updated.

- Update the firmware in the receiver (see "Working with scenes" on page 49).

Device is not found

Device is switched off

- Switch on the device.

Firewall blocks the WSM

- Enable the corresponding ports for the WSM.

Device is separated by a router

- Manually register the device with the WSM (see page 13).

Glossary

Deviation

Modulation deviation; modulation of the transmitter

Easy Setup

Function for allocating unused frequencies; a frequency preset scan can be performed to check all factory preset frequencies (presets). The spectrum of the selected frequency range is only checked selectively.

Firmware

Software that resides on a chip in the device. It can and, sometimes, must be updated. Updates can be downloaded from the Sennheiser homepage.

Frequency preset scan

Function for detecting (identifying) unused and occupied frequencies in the immediate vicinity.
The spectrum of the selected frequency range is checked selectively, i.e. only the factory preset frequencies (presets) and the frequencies stored in the channel bank "U" are checked.
The detected unsused frequencies can be allocated to the devices manually or automatically.

Frequency scan

Function for detecting (identifying) unused and occupied frequencies in the immediate vicinity. The complete spectrum of the selected frequency range is checked. The detected intermodulation-free frequencies can be allocated to the devices manually or automatically.

Intermodulation

Interference due to intermodulation can occur if at least 2 transmitters close to the receiving antenna produce high input signals in the receiver. The two high frequencies generate intermodulation products at non-linearities in the receiver (e.g. in the mixer). This can also occur if 2 transmitters are operated too close to one another. Fully new frequencies result from this which may interfere with the system's other usable frequencies.

Panels

Each panel displays a channel. The panels contain, among other information, the name of the device, the current frequency and the field strength display.

Presets

Unchangeable, factory preset frequencies which are stored in the channels of a channel bank (except channel bank "U").
The frequencies within a channel bank are intermodulation-free.

Professional Setup

Function for allocating compatible frequencies; a frequency preset scan can be performed to check the complete spectrum of the selected frequency range; interfering frequencies from external devices can be excluded before the allocation of frequencies.

Squelch

Squelch is a circuit function that eliminates annoying noise (hissing noise) when the transmitter is switched off or when there is no longer sufficient RF power received by the receiver. The squelch suppresses all signals that fall below a certain threshold value. Only if a wanted signal of sufficient strength is received does the squelch open again.

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